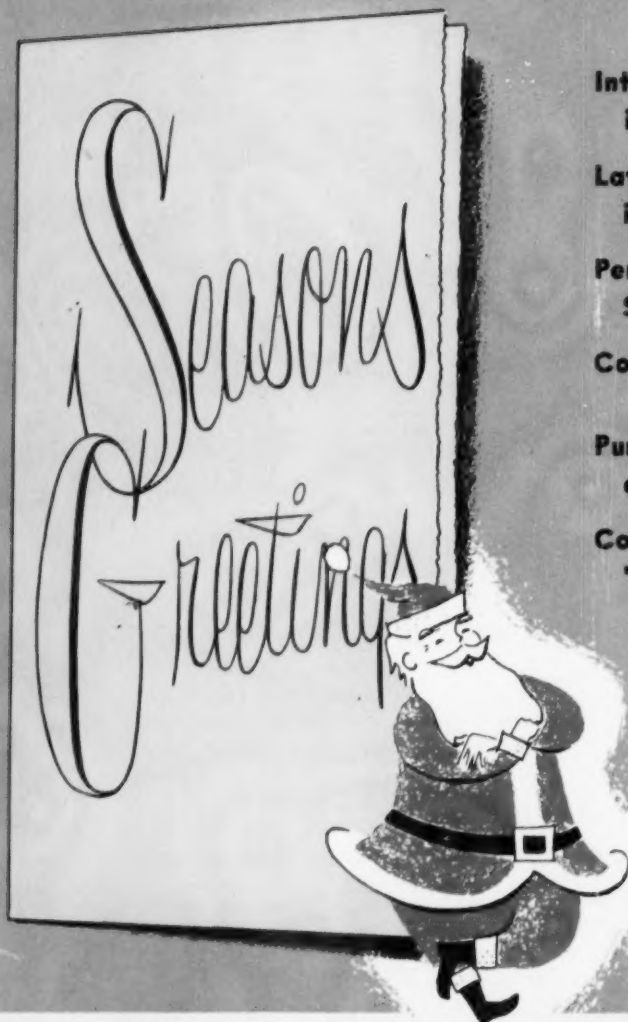


MATERIAL HANDLING **FLOW**



DECEMBER 1954

• HANDLING • AUTOMATION • PACKAGING AND SHIPPING



Integration of Transportation
in Continuous Flow Systems 61

Latest Techniques
in Radio Applications 64

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Supervision Tool, Safety Aid 68

Continuous Automatic Production 74

Punch-Card Control
of Pre-Packaging and Inventory110

Coordinated Flow—
"Secret" of Success114

COMING IN JANUARY—
"Handling Economies
for Greater
Wholesale Profits"

ONE OF A SERIES

You Get Many Benefits
by Specifying **VICKERS** Hydraulics



Hydraulics School



for Customers' Own Service and Maintenance Men

Manufacturers who have Vickers Hydraulic Equipment on their machines can have their own service men trained in the Vickers Hydraulics School. Since its beginning in 1945, this school has trained more than 1115 men from approximately 642 companies. There is no tuition charge for this training course.

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VICKERS Incorporated

DIVISION OF THE SPERRY CORPORATION

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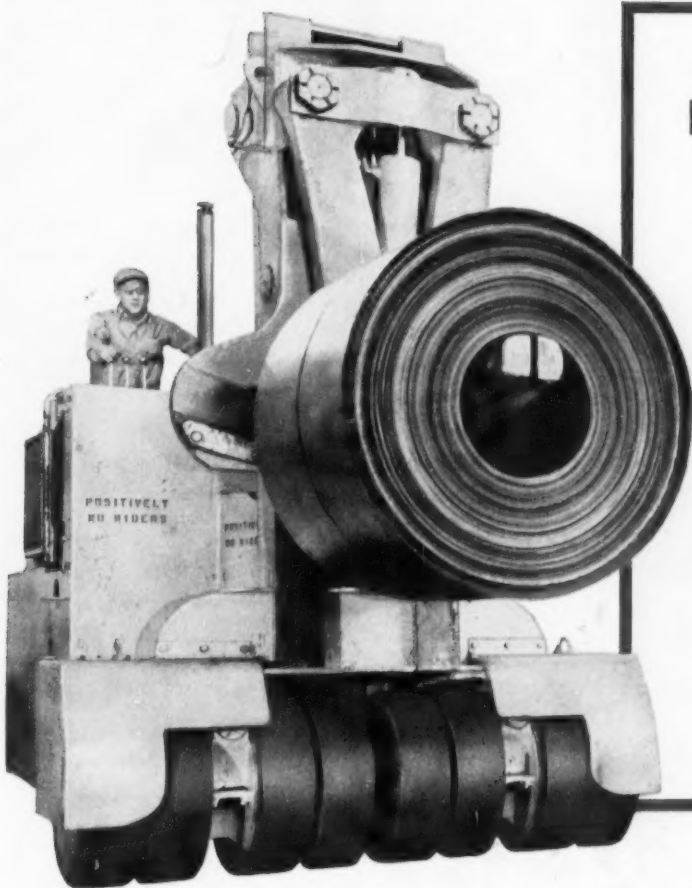
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ENGINEERS AND BUILDERS OF OIL HYDRAULIC EQUIPMENT SINCE 1921

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DECEMBER, 1954



SMOOTH SOLID

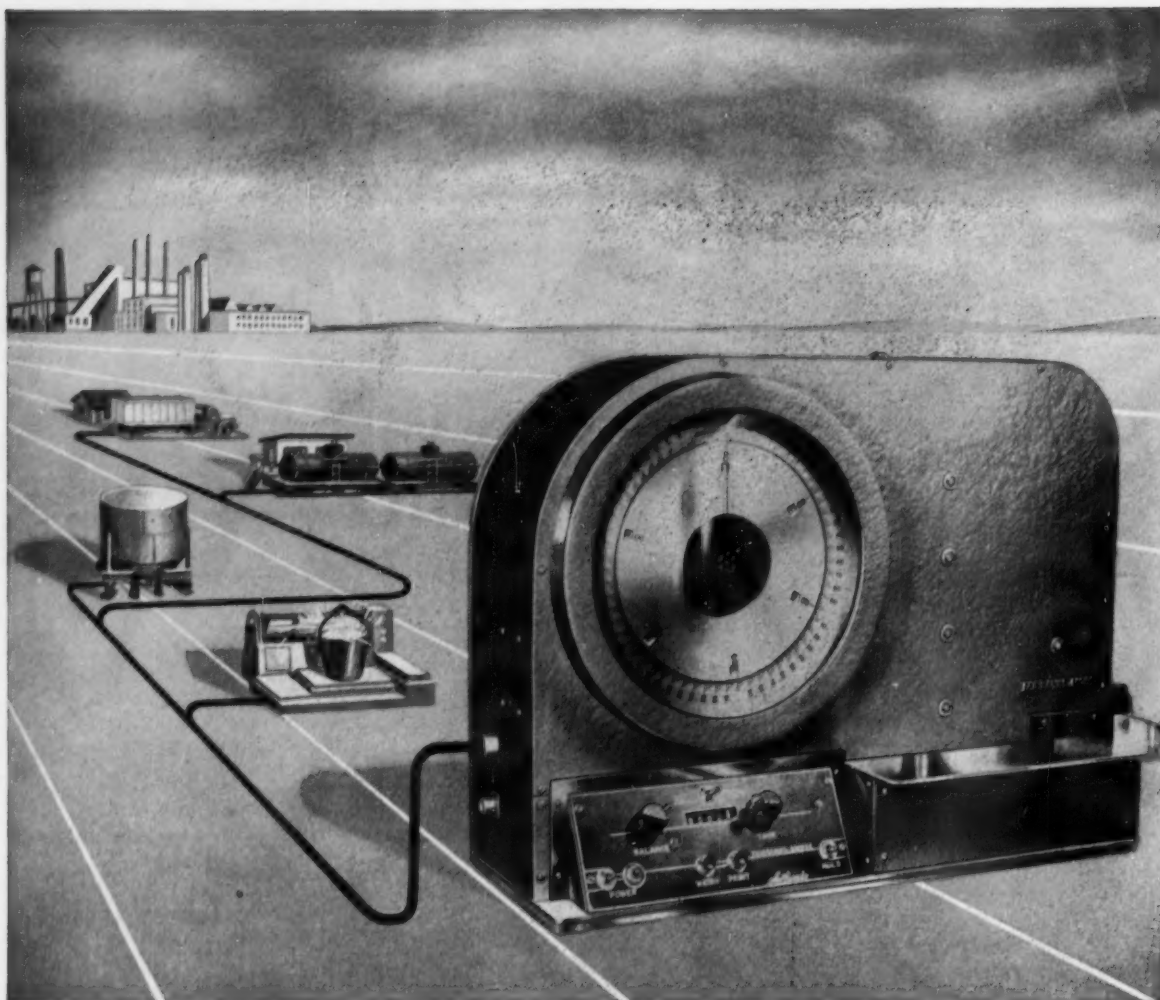
ALL-SERVICE TREAD
XTRA CUSHION

ALL-WEATHER TREAD

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PNEUMATIC

SEMI-PNEUMATIC
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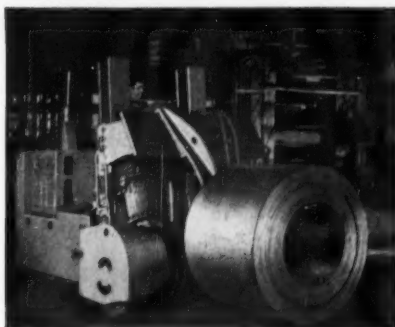
a name worth remembering when you want the best

SCALES • PUMPS • DIESEL LOCOMOTIVES AND ENGINES • ELECTRICAL MACHINERY • RAIL CARS • HOME WATER SERVICE EQUIPMENT • FARM MACHINERY • MAGNETOS
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Automatic Industrial Trucks Are "KEYED-TO-THE-JOB" At FORD'S Vast Rouge Plant



Simplicity of operation and ability to perform in a confined area make this Transporter ideal for moving rack-loads of springs.



Automatic's Skylift Giant which is less limited than overhead cranes and was selected for its long life and mechanical suitability—easily handles a 27,600 pound load of coiled steel.

From Operator-Led Transporters To 30,000 lb. Capacity Skylift Giants Automatic Trucks Prove Their Materials Handling Versatility at "World's Largest Industrial City!"

"Not only is Ford Motor Company's River Rouge the 'World's Largest Industrial City' with an area of 1,200 acres and 'population' of approximately 60,000 employees—it is also one of the most diversified of all industrial centers, with everything from blast furnaces and production foundries to assembly lines. This makes The Rouge an almost unparalleled challenge to the versatility of its materials handling equipment." And for "keyed-to-the-job" versatility of the scope needed here, there's the famous, wide-range, Automatic line.

Ford employs several types of Automatic trucks—from compact, maneuverable Transporters to mas-

sive, 30,000-pound capacity Skylift Giants! These Automatic trucks perform the normal tasks of moving, lifting, stacking, etc., and their adaptability enables them to be utilized on the diversified operations which Ford encounters in the various phases of manufacturing automobiles.

Ruggedness, economy, and reliability are additional Automatic qualities that have "paid off" in top performance for Ford.

Whether your operation is on the scale of the Rouge...or on a modest, small-business basis...there's a "Keyed-To-The-Job" Automatic just right for your needs! Look into Automatic's advantages—today!

MAIL COUPON TODAY!

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Chicago 20, Illinois

Without obligation, please send me the facts on Automatic "Keyed For-The-Job" industrial trucks.

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By.....Title.....

Address.....

City.....Zone.....State.....

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ELECTRIC TRUCKS

*Lighten
LIFE'S LOADS*

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EASY TO HANDLE • MINIMUM MAINTENANCE • LOWEST
DEPRECIATION LOSS • LARGE OR SMALL PLANT TOOL •
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**Quality,
Efficiency—
and Economy Too!**

**with an
In-Between Handling* System
Based on**

BIG JOE[®] LIFT TRUCKS



THE COUNTERWEIGHTER
Direct-Pallet-Approach

When "BIG JOE" introduced the IBH* system to industry, it for the first time made hydraulic handling economically feasible for *every* department. Gradually it has brought SPECIALIZATION to almost every *type* of materials handling. Now you can apply mechanical equipment to specific jobs rather than "get by" with the general performance supplied by a single, high cost materials handling unit—which may or may not be available when and where you want it.

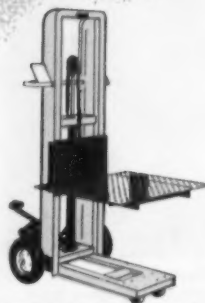
IBH* has altered old fashioned materials handling concepts by eliminating costly and often ineffective central dispatching stations in favor of INDIVIDUAL DEPARTMENT CONTROL.



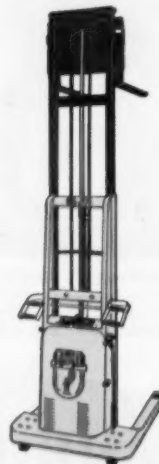
*Short distance hydraulic manipulation of materials too heavy for manual handling yet not requiring high priced power-driven equipment.

"HYDRAULIC HANDLING FOR EVERY DEPARTMENT"

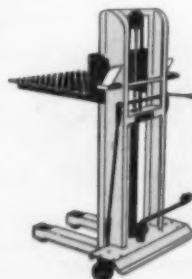
BIG JOE Manufacturing Company
900-08 West Jackson Blvd., Chicago 7, Illinois



Standard Platform Model 14



110" Telescopic Lift



Foot Operated
"Triple Action"

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OCCUPATIONAL HAZARDS
COMMERCIAL REFRIGERATION
AND AIR CONDITIONING

DECEMBER, 1954

MATERIAL FLOW

December, 1954

Vol. 10, No. 3

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WORLD'S HANDIEST HOIST

- Pull it down
- Hook on load
- Run load up

**KELLER AIR HOIST
SIZE 86A-1**

Here is an entirely new lifting tool that saves time and manpower on those troublesome handling operations in the 50- to 150-pound range . . . gives added strength to production workers for repetitive lifting jobs . . . frees larger hoisting equipment for heavier loads.

features:

- ▶ One-hand control—operator can reach out, pick up, and place 150-pound load with one hand.
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- ▶ Continuous service—air motor cannot overheat or burn out from overload or all-day operation.

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Grand Haven, Michigan

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Another Example of How
ELPAR
SPECIAL ENGINEERING
Can Solve Your Truck Problem



Clamping Down on Handling Costs

The Problem

Steel mills needed a *more flexible* means of handling coils of strip with industrial power trucks. Coils could be carried in only one position on the conventional ram. Yet much processing equipment throughout the mill required that the coils be placed in other positions. Thus, expensive rehandling was often necessary.

The Solution

ELPAR ENGINEERS developed a special clamp attached to a heavy duty rotating head on the truck. This clamp can pick up, carry and deposit coils horizontally, vertically,

or at any intermediate position. It grasps the coils firmly, but does not distort them or mar their surface. Coils of varying width and diameter can be handled.

The Results

An entirely new and more versatile concept of handling has been introduced in steel mills. Coils are now fed to equipment in precisely the position desired. Stacking can be done so as to get more steel on the same floor area. Such improvements lower handling costs.

This is just one more example of how ELPAR "special" industrial trucks can save you money. When

a standard ELPAR model will not suffice, take advantage of the ELPAR Special Engineering Service for your handling problems. It is available without cost.

WRITE TODAY!

Get this new booklet which explains ELPAR Special Engineering Service in detail. The Elwell-Parker Electric Company, 4291 St. Clair Ave., Cleveland 3, O.



**"The LORAIN SP-254W
is a fine crane...we'd be
lost without it..."**

Why would Camden Iron Works be "lost" without their Lorain Self-Propelled Crane? Because they don't want to lose *these* cost-cutting advantages! With their mobile Lorain, they can go anywhere in the yard fast... this crane is not "chained" to tracks. Big rubber tires travel easily wherever a truck can go.

Their Lorain can lift *everything* they need—big loads, bulky loads—and carry any load it can lift anywhere they want it. Long-boom reach means fewer time-consuming moves, higher stacking, fewer aisles. Good weather—or bad—one man does the work of a crew, and the Lorain's efficiency is the same around the clock. Then, too, Camden would miss the many extra-job duties performed by their versatile Lorain at low cost... such as, excavating, erection and maintenance. A Lorain Self-Propelled Crane, while it does a specialist's job, is a multi-purpose tool, saving time and money on every use. Now you see why Camden Iron Works praise Lorain performance. If you have a yard material handling problem, see your Thew-Lorain Distributor and find out how much more you get with a Lorain.

**CAMDEN
IRON WORKS**

handles an average of 100 tons of steel per day at their Camden, New Jersey plant with their 17½-ton Self-Propelled Lorain Crane. Using a 40-ft. boom, the Lorain unloads structural shapes from trucks and cars to storage—then feeds the production line as needed. Loads vary from ¼ to 7½ tons and from 6 to 65 feet long.

**THE THEW SHOVEL CO.
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OFFERING MORE THAN 136
SHOVEL-CRANE COMBINATIONS ON
CRAWLERS OR RUBBER-TIRES...
TO BEST FIT YOUR JOB FOR PROFIT!

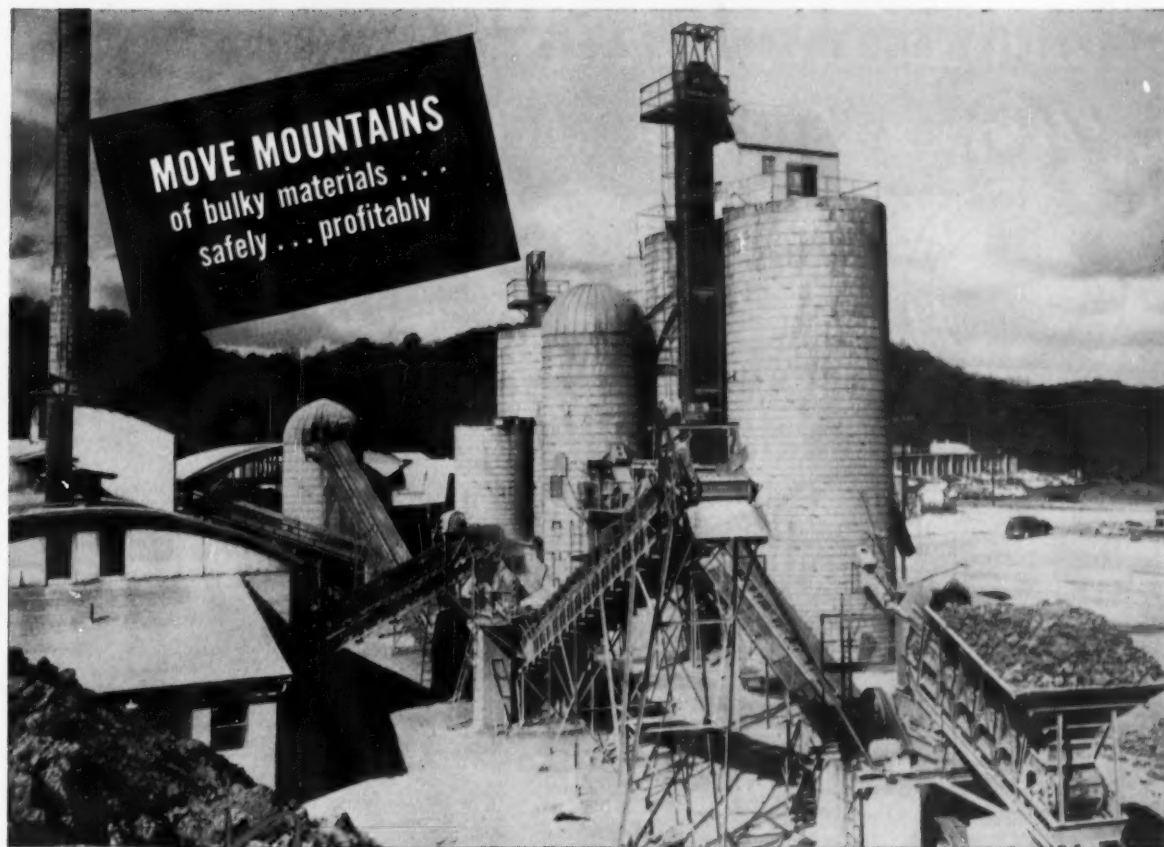


**CHECK THESE LORAIN CRANE FEATURES
FOR YOUR PLANT...**

- Saves manpower. One man is in charge of every job from the operator's seat.
- Unlimited mobility. Materials move when and where you need them. (Crawler mountings also available.)
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- Simultaneous hoist, swing and travel for added load handling speed and flexibility.
- Easily convertible to shovel, crane, clamshell, dragline or hoe for added profitable use.
- More than 16 lifting attachments available for any size, shape or type material.
- 4 travel speeds in both directions — 1 to 8 m.p.h.

**THEW
LORAIN.**

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inside a

Marietta concrete storage system

Meet increasing demands for safe, easily accessible storage for bulk materials now and be prepared for the future . . . with Marietta Concrete Storage Silos.

Your Marietta System will be engineered to perform every storage and materials-handling task your plant requires, with any type of intake or discharge or mechanical handling system that will expedite your operations. Any feature desirable can be provided . . . shakers, screens, live storage shelves . . . and the extra factor of

strength built into Marietta Concrete Storage Silos makes it possible to mount heavy equipment on top or sides whenever needed.

This flexibility of design, incorporated in every Marietta Storage System, easily provides for increased handling capacity for future expansion, in addition to allowing you to enjoy lower operating costs today. Write Marietta for your catalog which shows how modern Marietta Storage Systems can cut your handling costs.



MARIETTA AIR-CELL lightweight aggregate STAVES

Stronger . . . thicker than standard staves . . . an exclusive Marietta development. Give greater protection especially when dry materials are stored.

Marietta precast Air-Cell staves, made from lightweight aggregate, are 3 3/4" thick and provide insulation value equal to 15" of solid concrete.

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Marietta

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MARIETTA, OHIO

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American STORAGE RACKS

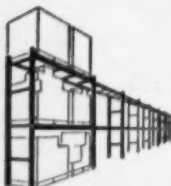


First Choice
YEAR AFTER YEAR

**AN EXCLUSIVE
AMERICAN FEATURE**



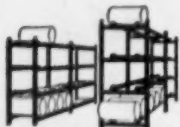
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Standard Pallet Racks



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**AMERICAN
METAL PRODUCTS CO.**



STORAGE RACK DIVISION

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**LETTERS
to the editors**

Wholesale Distribution To FLOW:

We were very interested in your article "Material Handling in a 'Best Managed' Firm" in the July issue of FLOW. We are presently considering the same type of distribution center as Eastman Kodak Company has adapted and it is surprising how parallel our thinking has been when compared with the system they have already put into use.

Inasmuch as we are in the planning stages on this project, we would like to get as much information as possible on what others have done along these lines. Could you supply us with the names of five or six firms who have established new distribution centers or warehouses with up-to-date handling and order picking techniques? We plan to contact these firms for possible tours through their facilities.

Donald T. Eyberg
Minneapolis-Honeywell Regulator
Company
Minneapolis, Minnesota

The latest material handling methods for all types of wholesale operations will be featured in FLOW'S January issue. In the meantime, should any reader have information which would materially benefit Reader Eyberg, we're certain it will be well received.

Progressive Years To FLOW:

..... I would like to take this opportunity to compliment you for the excellent way in which you played up our contrasting pictures of Revolvers loading horse drawn wagons and jet planes. As you know, you were the "first on the street" with this story and I believe it will be of mutual benefit

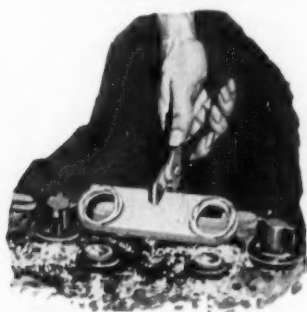
HERE'S MONEY SAVING TIP #3

from the GOULD Plus-Performance Plan

HOW TO CHANGE CHARGING PLUGS

Although plugs and receptacles are of rugged design, they are not indestructible and can be damaged by misuse. Also, it may be necessary to change the size or type of plug. The Gould Plus-Performance Plan shows you how in three, simple, easy steps.

YOU CAN DO IT
YOURSELF IN YOUR
OWN SHOP

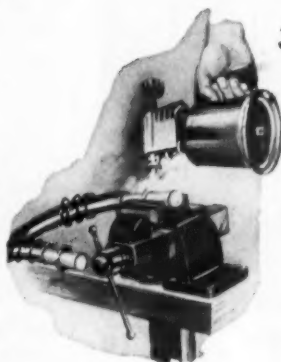


1. Break Circuit by Removing a Connector

This opens the circuit and prevents short circuit, which might cause accidental injury to personnel or equipment.

2. Remove Lugs and Replace

Terminal lugs are held in the plug by bolts or screws which, when removed, will permit the lugs to be withdrawn for replacement. After withdrawing cable and lugs from plug, should it become necessary to replace lugs, heat enough to melt solder sufficiently to free lugs from cable. Clean and tin wire . . . place in terminal and re-solder.



3. Reassemble Terminal Lugs in Charging Plugs

In reassembling cables into plug, make sure that the negative wire is placed in the negative side and the positive wire in the positive side. If the terminal leads are reversed in reassembling, the battery will be placed on charge in reverse and badly damaged.



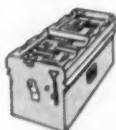
GOULD

Batteries

GOULD-NATIONAL BATTERIES, INC.
TRENTON 7, N. J.



For Railroad
Air Conditioning
and Lighting



For Mine
Shuttle Cars
and Locomotives



For Electric
Industrial
Trucks



For Diesel
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For Standby
and
Emergency Power

©1954 Gould-National Batteries, Inc.

Always Use Gould-National Automobile and Truck Batteries

There are many ways in which you can cut battery maintenance costs. Doing simple jobs like this, in your own plant, is the answer. The Gould Plus-Performance Plan gives you the "know-how" to "do it yourself." Send for the complete plan and start saving money. Mail this coupon TODAY!

BATTERY INFORMATION HEADQUARTERS

Dept. F-124 Trenton 7, N. J.

Please send me, without charge or obligation, the Gould Plus-Performance Plan for _____ batteries.
(type or types)

Name _____

Firm _____

Address _____

City _____ Zone _____ State _____

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**WITH THESE AUTOMATIC DOORS, THERE IS
NO SMOKE ALLOWED
AT THE CONSOLIDATED CIGAR CO.**

**SMOKE CAN RUIN
FINE TOBACCO . . .**
 so leading tobacco growers, like
 the Consolidated Cigar Co. in Glaston-
 bury, Conn., protect their crop in storage by
 doors equipped with Stanley Magic Door Con-
 trols. Because of their instant automatic opening
 . . . and positive closing when traffic has passed
 through, these automatic doors provide practical
 insurance against the entrance of ruinous smoke.

STANLEY[®] Magic Door CONTROLS

**CAN PROTECT YOUR PRODUCTS,
SPEED MATERIALS HANDLING . . . TOO**

When doors in your plant open and close automatically, you can count on these added advantages:

The "left-opened" door is completely eliminated. Your plant is protected against loss of conditioned air.

Plant traffic and materials handling is stepped up. Time-wasting door man-handling is a thing of the past.

Maintenance on doors and equipment is reduced. Stanley Magic Door Controls open plant doors as traffic approaches . . . hold them open while traffic passes through . . . then close doors—silently, securely.

Magic Door Controls are saving time, money, and manpower in many plants. Existing doors are easily equipped regardless of whether they swing, slide, or fold. See your Stanley Field Engineer for all the facts!

MAIL THIS COUPON for complete information on Stanley Magic Eye (photoelectric) and Magic Carpet Controls; also pull cords and switches.

STANLEY[®] Magic Door CONTROLS

Representatives
in Principal
Cities

THE STANLEY WORKS, MAGIC DOOR DIVISION
30112 Lake St., New Britain, Conn.

☐ Please send full information on Stanley Magic Door Controls.

☐ Have representative call.

Company Name _____

My Name _____

Address _____

City _____ Zone _____ State _____

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LETTERS

Continued

to Revolver and to the Industrial Publishing Group.

I wonder if I might ask one favor. Mr. Leon Shloss, Director of Public Relations at Republic Aviation Corporation in Farmingdale, Long Island was instrumental in securing this photograph for us and I would appreciate it if you could send him a marked copy of your October issue. Your publication is good looking enough that I would like him to see the whole book as well as this particular page.

William Busse
 Revolver Company
 North Bergen, N. J.

In the article referred to (October, page 37) FLOW saluted Revolver on its 50th anniversary, and showed the progress made from the days of the horse drawn wagon to the modern day jet.

**Needed:
More Durable Material**
 To FLOW:

In your June 1954 issue, page 72, you featured a very informative article entitled "Pump Handling Systems". We are producing the model 80 diaphragm pump in which we use various materials for the diaphragm, depending upon liquids pumped.

We find Neoprene, with a Durometer hardness 75, quite satisfactory for many pumping operations. However, it will not stand up when pumping trichlorethylene and terpene chemicals. If you can supply us information on various materials that might supplement our use of Neoprene and will handle such liquids as above mentioned, we will appreciate advice from you.

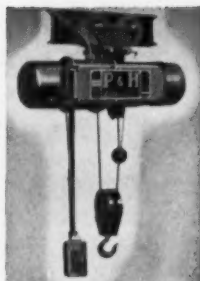
C. R. Perry
 The Perry Company
 Waco, Texas

We have contacted firms which will be of help to this company in finding a more durable material for the chemical in question.

FLOW

P&H Zip-Lift Electric Hoist (Pushbutton control)

Handy little power-house for loads from 250 pounds up to one ton. Versatile — in use in metal shops, dairies, hospitals, bakeries. Solves your load-handling problem within the weight limits specified. Plenty of literature available for more detailed information. Ask for it.



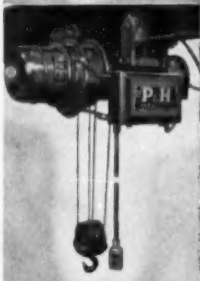
P&H Zip-Lift Electric Hoist (Rope Control)

You can do anything with this model that you can with the Pushbutton Control Zip-Lift. The less expensive rope control gives you a break on price — doesn't cut down the number of jobs you can perform. You get years of trouble-free service at an extremely reasonable initial cash outlay.



P&H Hevi-Lift

For heavy loads — and your own particular problem. The Hevi-Lift is a custom-built hoist — manufactured to your specifications. Over 3,000,000 variations possible on this husky load-handler. You're sure to find the right combination for you. Take a look at the literature available — then see your P&H distributor.



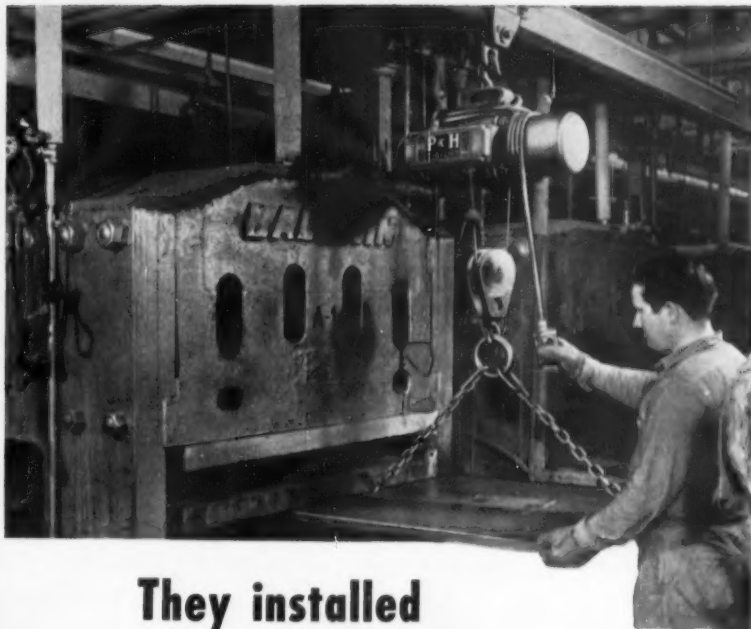
P&H Hand Chain Hoists

Perhaps, you're in the market for a hand chain hoist; rather than wire-rope. If you are, you'll have to look far to find a better value than these P&H work-horses. Handle up to 25 tons easy as pie. Spur-gear; Timken or roller bearing trolleys; Army-Type trolleys — whatever you need. Ask for literature on the complete line.



P&H Jib Cranes

Hang your hoist on a P&H Jib Crane — then you've got a dependable one-two combination working for you. Eight different models — bracket-type, mast-type and pillar-type. Capacities up to 12,000 pounds. Use the coupon for fast return of literature on the complete P&H Line.



They installed brand-new **P&H** Electric Hoists

... and saved 100 times their operating cost the first year!

UP until 1940, W. H. Salisbury & Company in Chicago, manufacturers of molded, extruded, and cut rubber products, used chain blocks for lifting and moving material. Today, it uses 19 P&H Zip-Lift Wire Rope Hoists. "We've never had an accident with a P&H Zip-Lift Hoist," said a spokesman, "and they have proved to be economical in operation and highly efficient, as well as safe."

Cost Only a Penny an Hour

Depreciation and interest on the \$300 cost of each 1,000-pound Zip-Lift amounts to \$26.00 a year. Maintenance expense is so low the company doesn't even bother to enter it as a cost. But, even adding the high cost of \$10 per year, total operating cost is only \$36.00 per year. This breaks down to \$3.00 per month — 15¢ per day — or less than one cent an hour.

Each Hoist Saves 100 Times Its Operating Cost

One operation — lifting a mold plate and starting a new cycle on the molding machine — formerly took ten minutes. Today — thanks to a P&H Hoist — it takes five. This saves ten minutes per hour — \$3600 per year — exactly 100 times its cost of operation!

Detailed Story Can Be Yours

Fill in the coupon below. We'll send you back a four-page, illustrated folder, giving all the details on the Salisbury saving. You'll get some ideas of your own out of it, too.

P&H Hoists
HARNISCHFEGGER CORPORATION
4643 West National Avenue, Milwaukee 46, Wisconsin

Please send me the detailed story of the savings made by W. H. Salisbury Company.

Name.....Title.....

Company.....

Address.....

City.....Zone.....State.....

2839

Tear out and mail today

P&H HOISTS

**HARNISCHFEGGER
CORPORATION**
4643 W. National Ave. • Milwaukee 46, Wis.

Circle No. 101 on Reader Service Card for more information

SHOWING FOR THE FIRST TIME - - -

A New Addition to the Dempster-Dumpster System of Low Cost Bulk Materials Handling

● Now you can have either of two types of Dempster-Dumpsters in the fastest, most efficient and lowest cost method of bulk materials handling ever devised.

IN THIS MODERN, low cost system, one truck-mounted Dempster-Dumpster picks up, hauls and empties, or sets down intact, one loaded detachable Dempster-Dumpster Container after another, regardless of design or size, handling bulk materials of practically every description.



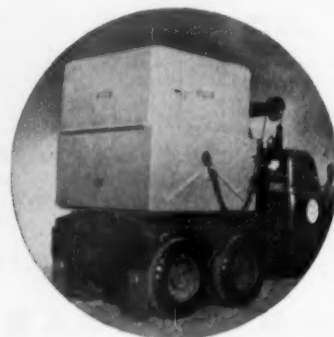
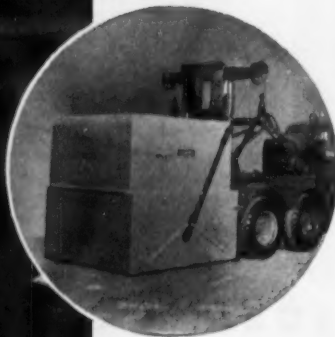
The new Dempster-Dumpster Type DTLF offers several desirable features along with all the economies provided by the Type LFW. These features include: (1) Improved load distribution with container carried in more forward position between wheel centers. (2) Extreme high dumping in cases where it is desired. (3) Vertical pick up of loaded container. (4) Container, loaded or empty, is always in horizontal plane in carrying position. Automatic locking device for positive rigidity of container while in carrying position is, of course, provided.

TREMENDOUS SAVINGS WITH THE DEMPSTER-DUMPSTER SYSTEM HAVE BEEN PROVED BEYOND QUESTION.

One truck-mounted Dempster-Dumpster, operated by only one man, the driver, serves scores of containers of various capacities up to three times greater than the average dump truck. You eliminate trucks standing idle . . . eliminate re-handling of materials . . . eliminate loading crews. You increase efficiency, sanitation and good plant-keeping.

Containers range from 2 to 21 cu. yds. capacity for use with recommended type Dempster-Dumpsters. Each container is designed to suit the materials to be handled—be they trash, rubbish, liquids, dust, bulky, light or heavy. Many leading plants, in almost every type of industry, have found it indispensable after installation. Its proved savings alone justifies an investigation of its potential value in your plant now. Write to us today for complete information. Manufactured and sold exclusively by Dempster Brothers, Inc.

The photo at left illustrates the amazing ability of the Type DTLF Dempster-Dumpster for high dumping. The three photos below show the Pick Up, Haul and Dumping action, hydraulically controlled from cab.



● **D E M P S T E R**

FLOW

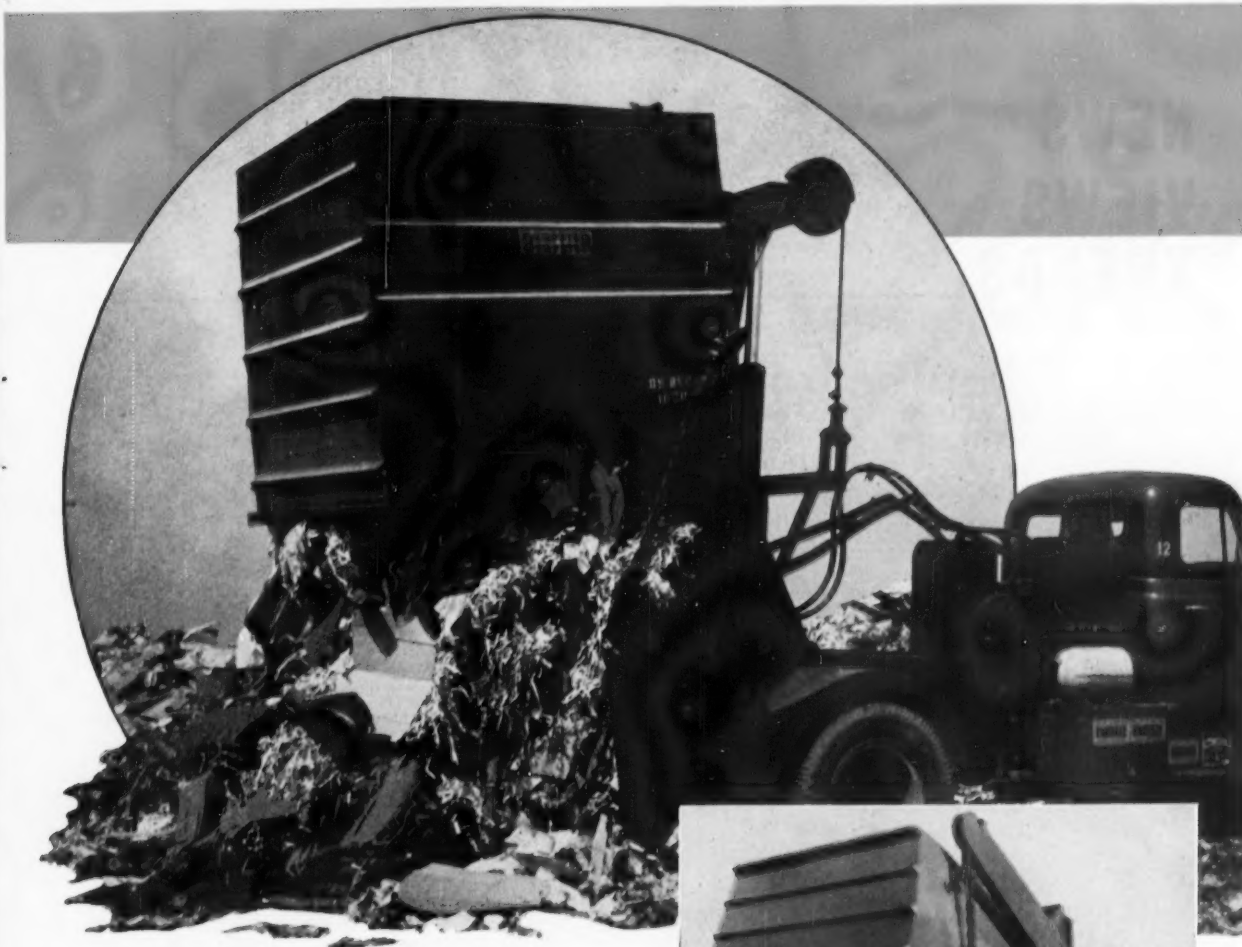


Photo above shows the new Dempster-Dumpster Type DTLF dumping 8 cu. yds. of rubbish. At right you see the Type LFW with load in carrying position. Dempster-Dumpsters are available in capacities capable of handling up to 38,000 pound payloads.



One Truck-Mounted
Dempster-Dumpster Handles Scores
of Containers... All Designs... All Sizes

BROTHERS 6124 SHEA BUILDING, KNOXVILLE 17, TENN.

DECEMBER, 1954

NEWS VIEWS TRENDS

NOLAN ALIGNS WITH PHILLIPS

The line of dumps and car controllers formerly manufactured by Phillips Mine and Mill Supply Company, Pittsburgh, will be manufactured and marketed by The Nolan Company of Bowerston, Ohio, under an arrangement just concluded by the two companies. Nolan will assume all inventory, patterns, drawings, patents, etc. of Phillips, including the trade name.

NEW POLICY FOR ALL STEEL

All Steel Welded Truck Company has confined its sales efforts and production to a complete line of wheels and casters and to specialized aluminum handling equipment for the rubber and baking industries. The change in manufacturing policy became effective October 25, and is expected to insure better customer service, reduce manufacturing costs, and allow the company to take care of the very large volume of business in the lines handled, according to Harry Clark, Jr.

VERSABAR FORMS CORPORATION

The Versabar Division of M-H Standard Company has become a separate organization known as Versabar Corporation, with offices at 515 Communipaw Avenue, Jersey City, New Jersey. Officers of the new corporation are William E. Taylor, president, and Andrew Kornylak, vice president.

G. E. PLANS WEST COAST CENTER

Plans for establishment of a new Communication Equipment Center in Redwood City, California were made known by General Electric Company. Harrison Van Aken, general manager of communication equipment, said the new facility is necessary to serve more adequately the greatly increased demand for General Electric two-way radio equipment in the western states. Plant manager will be Irvin H. Webster.

COLSON BROADENS SCOPE

The Colson Corporation has entered into an agreement with Structo Company, Ltd., Ottawa, Ontario, which gives Colson exclusive manufacturing and distribution rights to introduce Structo products in the United States. The products include steel framework angles which are said to be strong and quickly constructed to form storage racks, work platforms and movable bins, plus a variety of other units.

NATIONAL CONTAINER OPENS N. C. PLANT

National Container Corporation has officially opened its newest and most modern corrugated kraft paper converting plant in Salisbury, North Carolina. The 152,000 square foot plant will serve users in the Carolinas, Tennessee, Virginia and West Virginia.



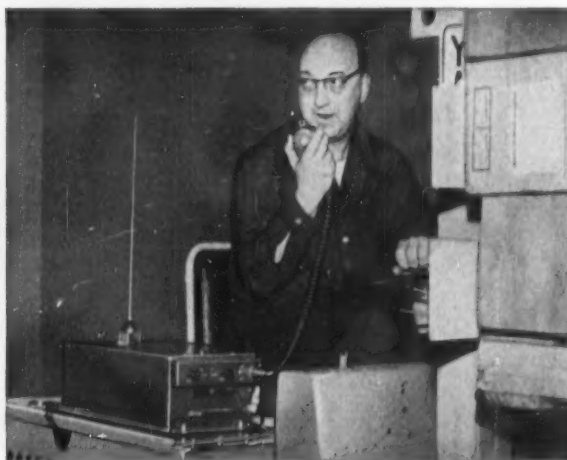
One word from you and . . .

STORAGE AREAS GO "ON WHEELS"

... supply keeps pace with production!



IN A SMALL PLANT General Electric 2-way radio delivers a premium in vehicle performance. The number of payloads per hour increases . . . demurrage expense is cut way down.

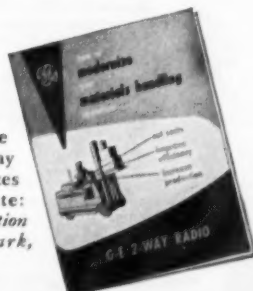


IN A LARGE PLANT G-E industrial 2-way radio solves the problem of truck travel distance. Materials handling instructions can be acted on within seconds after their receipt.



FREE!

Get this booklet and see how G-E industrial 2-way radio efficiently organizes plant production. Write: General Electric Co., Section X32124, Electronics Park, Syracuse, New York.



That one spoken word which links production units with material supply points does a big job *in every plant*. Radio takes the guesswork out of when raw material will arrive on the line. And, excess supplies can be located away from production machinery to achieve safer working conditions. Your radio equipped trucks will speed the flow of material between all departments . . . will always be "on call" to complete a rush order or emergency operation.

General Electric takes the guesswork out of how dependable industrial communications can be. Examine outstanding G-E equipment today. Discover why it is preferred everywhere for low maintenance and long life.

Progress Is Our Most Important Product

GENERAL  ELECTRIC

Circle No. 94 on Reader Service Card for more information

Make sure your **CLARK'S**



POWERWORKER "26" Pallet Truck
4000 and 6000 lbs. capacity

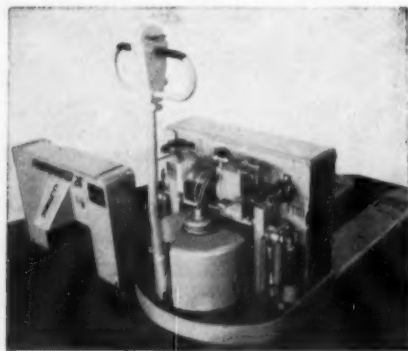
... Ask him to



POWERWORKER "26"
Platform Truck
4000 and 6000 lbs. capacity



POWERWORKER Tilting Fork Stecker
1500, 2000, 2500, and 3000 lbs. capacity



HYDRAULIC SYSTEM EXPOSED IN 2 MINUTES . . .

Remove 4 bolts and slip off the one-piece cover; the complete hydraulic sub-assembly is exposed. Hydraulic motor, pump, oil reservoir, valve assembly and self-aligning cylinders are immediately accessible and ample space is provided for quick inspection or removal.

Circle No. 51 on Reader Service Card for more information

maintenance man sees this— **POWRWORKER "26"**^{*}

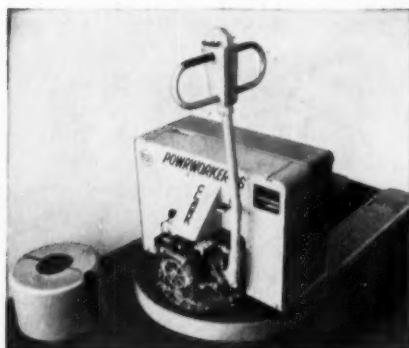
The most "SERVICEABLE" truck ever built!

Built for years of dependable service, the POWRWORKER is designed with the maintenance man in mind. No lubrication is necessary. Wheel bearings and drive motor bearings are sealed for life. Gear train, mounted on ball and roller bearings, operates in a totally enclosed bath of oil. Direct wiring between controls and motor eliminates the source of resistance. There are no commutators or long flexing wires, eliminating any chance of power loss and insuring maximum efficiency.

Every working part is completely and easily accessible. Either the hydraulic system or the power head can be uncovered separately, permitting service without further dis-assembly.

For all-round serviceability and operating efficiency, no truck on the market can match the POWRWORKER, the most compact and functional standard truck ever built. See your own local Clark dealer for further information or demonstration.

compare these ACCESSIBILITY features



POWER HEAD READY-TO-WORK-ON IN 2 MINUTES . . .

Split cover allows complete accessibility to the drive motor, brakes, resistor and control panel by merely removing 7 screws. Revolving head permits servicing any side of the power head without further dis-assembly. For major overhaul, the whole unit can be removed in 17 minutes.



CHANGE DRIVE TIRE IN 12 MINUTES . . .

Standard Press-on type demountable tire is furnished as original equipment. Raise the truck 12 inches and loosen spanner nut which releases the axle shaft and the wheel drops out. Split wheel rim with spreader inserts allow immediate tire dis-assembly and re-assembly.



SERVICE BONUS—POWER UNIT REMOVED IN 17 MINUTES . . .

For complete service or overhaul—when necessary—the complete power head, control handle and drive mechanism can be lifted out with a hoist after removing three bolts. Another Example that the POWRWORKER is designed with the maintenance man in mind.

^{*} The POWRWORKER "26" is only 26 inches longer than the load . . . the shortest standard truck on the market!

☐ Please send POWRWORKER literature.

☐ Have representative call.

Name _____

Firm Name _____

Street _____

City _____ Zone _____ State _____

POWRWORKER SECTION
Industrial Truck Division
CLARK EQUIPMENT COMPANY
Battle Creek 13, Michigan

CLARK[®]

EQUIPMENT

**TOWMOTOR CORP.
ENLARGES PLANT**

Future plans of Towmotor Corporation are centered around a new plant designed to streamline production facilities, according to C. Edgar Smith, president. Designed to add 155,000 square feet of space, Towmotor's new Cleveland plant will permit centralizing of departments, and will also make space available in existing buildings for expanding research and development activities.

**THEW CONTROLS
DIXIE CRANE**

Arrangements were recently completed by Thew Shovel Company for purchase of the controlling stock of Dixie Crane & Shovel Company, Inc. Acquisition of control was made so that Thew might participate in the low-cost crawler and rubber tire mounted, $\frac{3}{8}$ yard, 6-ton shovel-crane market, according to C. B. Smythe, president. The manufacture, distribution and trade-name of Dixie Crane will remain unchanged.

**OLD TIMER
HAS NEW LOOK**

The 78 year old Harrington Company expects its new plant to make possible a 30 to 50 percent increase in production by compressing manufacturing facilities into little more than half the space formerly occupied. The \$250,000.00 single story structure is located at Plymouth Meeting on the Delaware River Extension of the Pennsylvania turnpike. Peerless hoists are among other material handling equipment manufactured by the firm.

**JONES & LAUGHLIN
TEXAS BOUND AGAIN**

Plans for construction of a new Container Division plant and office in West Port Arthur, Texas, were announced by Jones & Laughlin Steel Corporation in Pittsburgh. The new building, which will be about 38,000 square feet in size, will be located on the same property as J&L's present plant.

**QUAKER COMPLETES
NEW WAREHOUSE**

A 16,000 square foot warehouse has been completed by Quaker Rubber Corporation, Division of H. K. Porter Company, Inc., Philadelphia. The new building will double present factory warehouse space and will include a hose processing department and additional shipping facilities, according to G. A. Dauphinais, vice president and general manager. It is constructed of prefabricated structural steel and cinder block.

**LAMSON ENTERS
ATOMIC FIELD**

A new department has been established at Lamson Corporation which will specialize in the manufacture of mechanical accessories necessary for the control and operation of atomic energy power plants of all types. The 74 year old company presently manufactures conveyors and allied equipment. Ross Atkinson, a 16 year company employee, will head the new department.

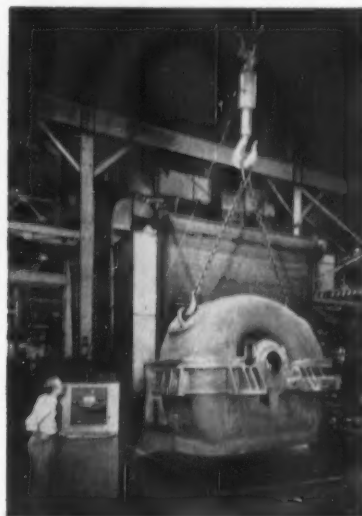
**ARKANSAS PALLET
OPENS NEW OFFICE**

A new office has been opened in Chicago by Arkansas Pallet Company. Located at 8 South Michigan Avenue, the company says the new facility has been initiated in order to give better service to customers in the Chicago area. The office will be headed by R. D. "Bill" Jones who is well known and experienced in the material handling field.



PACKAGED PRECISION MEASUREMENT

Weight is measured in SR-4 crane scale in swivel hook (shown resting in cradle at left) and weight is indicated remotely on mobile indicator (right foreground in picture at left). Photograph below shows actual weighing operation.



A leading manufacturer of electrical equipment cuts weighing costs by 12% with accurate, remote-indicating SR-4® Crane Scale

At a leading manufacturing company of electrical equipment, a Baldwin SR-4 Crane Scale has decreased annual weighing costs by 12%. The crane scale is used to weigh accurately huge turbines, generators and propulsion gears while they are being moved on 50 ton capacity cranes. Accurate weight measurement is important information for planning shipment of the equipment and its installation at the eventual site of operation.

This company's materials handling section found their SR-4 Crane Scale gave them these five important, cost-

cutting advantages over their previous, beam-balance, method of weighing:

- 1. Greater Accuracy**—The SR-4 Crane Scale has been tested for accuracy of 0.2 percent measuring loads from 850 lbs. to 34 tons.
- 2. Greater Capacity**—The SR-4 unit can weigh anything up to the limits of the 50 ton cranes on which it is used.
- 3. Convenience**—Remote indicating of weights simplifies weighing operations . . . saves valuable time and manpower.
- 4. Interchangeability**—The SR-4 unit is interchangeable between all of the cranes

in operation. Thus, one unit performs a multitude of weighing operations.

- 5. Lower Maintenance**—Maintenance is limited almost exclusively to simple greasing of the swivel hook.

You, too, will profit when you use Baldwin Packaged Precision Measurement to simplify operations, save you time and money . . . in any measurement of load, fluid pressure or torque. You'll benefit by sending today for our illustrated bulletins which will give you complete detailed information. Address Dept. 3311, Baldwin-Lima-Hamilton Corporation, Philadelphia 42, Pa.



BALDWIN-LIMA-HAMILTON

General Offices: Philadelphia 42, Pa. • Offices in Principal Cities
In Canada: Peacock Bros., Ltd., Montreal, Quebec

Circle No. 30 on Reader Service Card for more information

RAYMOND

Porta-dock^{*} *loads and*

TRADE MARK

ANOTHER
RAYMOND
FIRST!

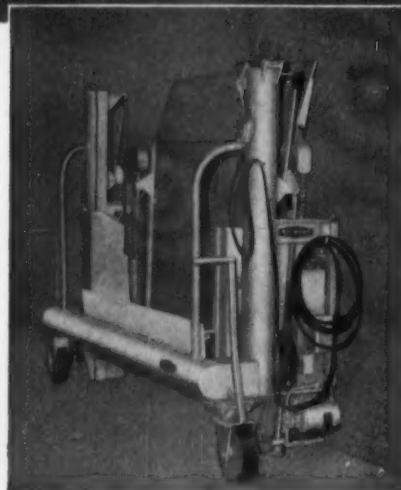


1. Incoming shipment is drawn from motor truck onto Porta-Dock's elevating platform by hand truck.

● **THIS PORTABLE DOCK** handles loads weighing up to 6,000 lbs., elevates from the floor up to 56 5/16". Powered by a 1 1/2 HP motor-driven hydraulic pumping unit which plugs into any convenient outlet. Also available battery powered. Has push button elevating and lowering controls that can be operated from floor or platform. The unit may be used indoors or outdoors, folds compactly for storage when not in use.

PortaDock folds up compactly for storage so that it may be rolled out of the way when not in use.

*Patent applied for



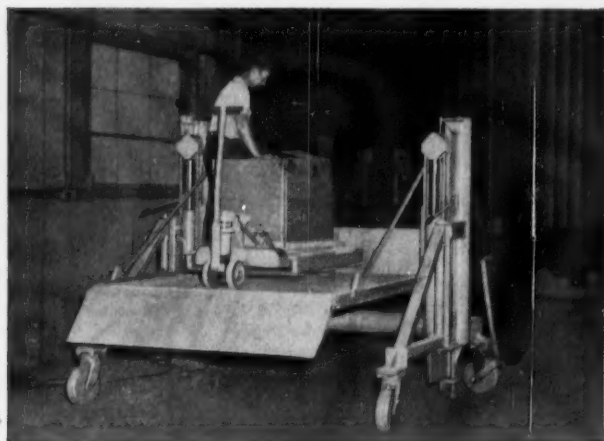
unloads trucks at ground level

—no loading docks needed!

GOOD NEWS...

Now you can load and unload motor trucks from ground level with the RAYMOND PortaDock. This new portable dock actually eliminates the need for permanent loading docks, elevators or truck wells. Ideal for use by factories, warehouses, wholesale distributors, retail stores.

RAYMOND PortaDock rolls easily right up to the tailgate of any over-the-road truck. An industrial truck is then run onto elevating platform and raised to the level of the motor truck bed. Unit loads are transferred to the elevating platform, lowered to the floor and transported to production or storage.



- 2.** Hand truck and load being lowered to floor by hydraulic-operated PortaDock.



- 3.** Incoming load is taken off PortaDock for transporting to production or storage area.

WRITE FOR BULLETIN describing the new RAYMOND PortaDock—it gives you full details. Fill in and mail the coupon now.



**ELECTRIC INDUSTRIAL TRUCKS
HYDRAULIC ELEVATING EQUIPMENT**

The RAYMOND CORPORATION

3345 Madison St., Greene, N.Y.

Please send Bulletin on your new Portable Loading Dock.

NAME _____ TITLE _____

COMPANY _____

STREET _____

CITY _____ STATE _____



Fast-working 12 cu. ft. Auto-Scoop Packs more "muscle," moves heavier loads

"Plants its front feet" to give positive traction, full bites

Now you can step up one-man bulk handling as much as 20% per load. The Load-Plus Auto-Scoop combines greater power (33 hp @ 1800 rpm) with heavy-duty construction and effortless hydraulic functioning...insures ample capacity for easy moving of 1200 lb. loads (up to 200 lbs. more than comparable scoop loaders).

Along with this extra capacity you get maximum stability and traction. Boom arms crowd the bucket forward as it rises. Pressure against the bucket applies downward pressure on the big driving wheels. The heavier the load being dug or carried, the more it increases traction.

Even stubborn materials yield quickly to Auto-Scoop action...without excessive traction crowding. Operator can retract his

bucket, independently of hoisting, even at ground level. This low bucket tilt-back action enables him to work materials into bucket before hoisting boom arms, thus increasing traction right at the start.

Low tilt-back also facilitates loading small piles, windrows and loose parts, whereby operator can actually flip the load into the bucket, and permits carrying full bucket as low as 4 1/2" above ground.

Specifically designed for most efficient scoop loader operation, the Auto-Scoop also offers shortest turning radius (6'6"), faster speeds (to 13.88 mph in reverse, 7.66 forward), higher clearance (4'6" under lip, 6'8" under hinge) and other time-saving features. Write for Catalog L12-4 and name of distributor who sells or services the Auto-Scoop in your city.

(Comparative performance based on well-known scoop loaders now in the field).

For bigger work, Jaeger offers the 1 cu. yd. Load-Plus, with torque converter, power steering and either front-wheel or 4-wheel drive.

The Jaeger Machine Company, 611 Dublin Avenue, Columbus 16, Ohio

JAEGER LOAD-PLUS *auto-scoop*

AIR COMPRESSORS • PUMPS • MIXERS • PAVING MACHINES
Distributors throughout U.S. and Canada and Principal Cities of the World

Circle No. 119 on Reader Service Card for more information

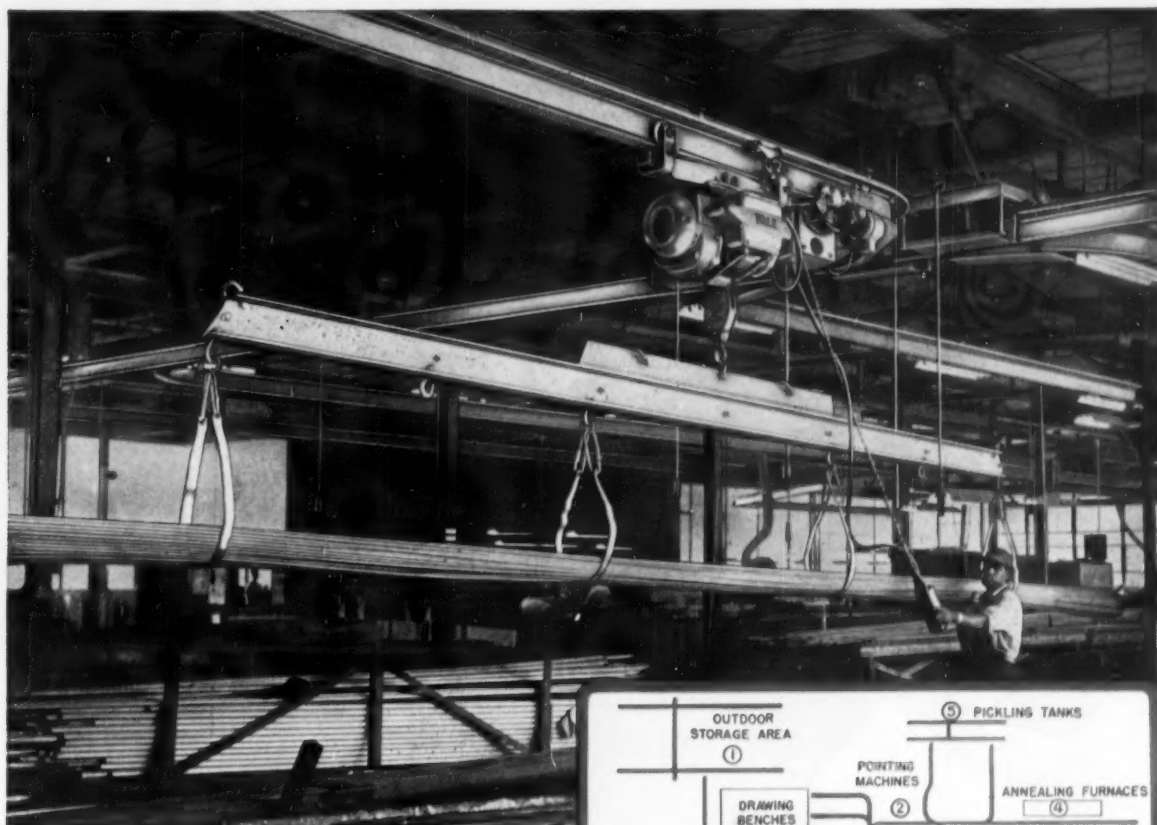


Power to load stubborn materials, such as super-phosphate. Pressure on rising bucket increases tractive capacity.



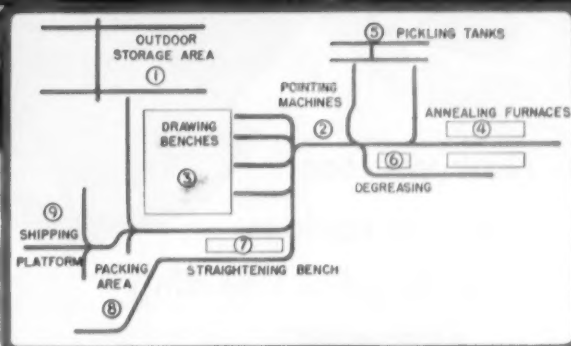
Easily handles full loads to 1200 lbs. at all dumping heights and positions. All operations of boom arms and bucket are under finger-tip hydraulic control.

You can do it better with Louden engineered monorail!



Hard-to-handle materials or shapes? Let Louden's long experience lick it.

Louden pioneered monorail handling. This longest and broadest experience with this most adaptable and most flexible of all materials handling methods naturally offers many *extra* benefits to men seeking answers to any handling problems. Shown above is part of a Louden SuperTrack System in a well-known eastern factory where a Louden MotoVeyor makes easy work of the speedy handling of long, flexible, easily-damaged tubing. The hoist has 2,000 pounds capacity and the MotoVeyor travels at 125 feet per minute. This Louden Monorail System



also connects with the pickling house where a Louden Monorail Crane speedily and safely handles various sizes of tubing through the series of vats. Benefit by Louden experience on YOUR next handling problem.

THE LOUDEN MACHINERY COMPANY
4312 Broadway, Fairfield, Ia.



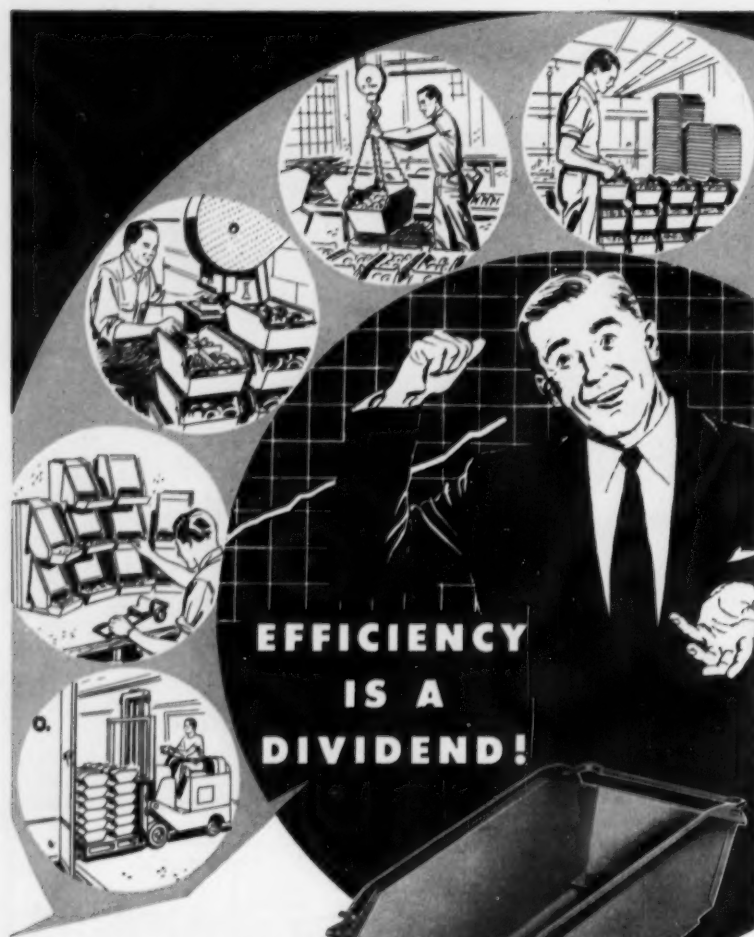
SEND FOR THIS BOOK—
Write for your copy of "ECONOMICAL Material Handling" . . . full of time-saving, cost-cutting ideas and case histories. Free . . . no obligation.

Louden

MONORAIL & CRANES

Since 1867—the first name in materials handling

Circle No. 129 on Reader Service Card for more information



Now you can
get new savings
in small parts handling

with **NESTIER** BOXES

If unnecessary handling is eating into profits in your plant, put versatile NesTier materials handling boxes to work for you . . . one box serves throughout the plant, from receiving to packing or shipping.

Empty units nest compactly, save valuable floor space. Filled, they tier in rigid stacks with contents of all boxes fully visible and accessible through double hopper ends.

Check for yourself NesTier's superiority over other methods . . . find out why they'll pay off fast in your plant!

Write today for literature.

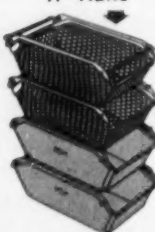


THE CHAS. WM. DOEPKE MFG. CO., INC.
8836 BLUE ASH RD. • ROSSMOYNE, OHIO

Circle No. 72 on Reader Service Card for more information



IT NESTS
IT TIER



IT RACKS



MEN in the news

. . . at "Shaw-Box" Crane & Hoist Division, Manning, Maxwell & Moore, Inc.

G. A. Andree, who has served the company for 24 years, has been named general sales manager. After diversified experience in the engineering, advertising and estimating departments, he entered the field sales organization and in 1948 was transferred to Muskegon, Michigan as assistant general sales manager. He was most recently director of engineered crane sales.



G. A. Andree

. . . at Insul-8-Corporation

A veteran with more than 15 years experience in the crane and monorail industry, C. J. Mayo, has been named general sales manager. He most recently had charge of western Trambeam sales for Whiting Corporation.

. . . at Package Machinery Company

Lewis A. Curtis was promoted to staff sales manager and transferred to the company's home office in East Longmeadow, Massachusetts. Ernest A. Hjelm succeeds Curtis as New York sales manager.

. . . at American Tractor Corporation

C. F. Rogers has been employed as general sales manager to set up a sales organization new to the tractor industry.

We can CUT your Bulk Material Handling Cost



Let us prove . . . BY A
DEMONSTRATION . . . the many
advantages of loading with
the combination of
Clutch-Type Transmission and
Hydraulic Torque Converter . . .
brought to you by the

TRACTOMOTIVE
TL-10
TRACTO LOADER

SEE how the smooth-operating HYDRAULIC TORQUE CONVERTER DRIVE speeds loading — no butting or ramming, no engine stalling. No clutching either — operator crowds steadily into pile using only the foot throttle and bucket control levers. Wheel spin is practically eliminated, tire wear greatly reduced. Bucket action is snappy at all times because speed of engine and hydraulic pump remain constant.

SEE how the specially designed CLUTCH-TYPE TRANSMISSION eliminates most shifting. You simply

push a lever to go forward, pull it back for reverse. Reverse is almost twice as fast as forward.

SEE how easy it is to maneuver the TL-10. Bucket over drive wheels utilizes weight of load for greater traction . . . eases weight on rear steering wheels. Turning radius is only 11 ft. at tip of bucket . . . works in areas that would normally accommodate only lower capacity machines. You can turn from a 9-ft. aisle into a 10-ft. bin!

Only by watching the TL-10 work can you fully realize the great savings you can make on bulk material handling. Let us arrange a demonstration NOW! Wire, write or call.

Never-Anywhere— A WHEEL LOADER LIKE THIS!

$\frac{3}{4}$ cu. yd. bucket — weight 11,400 lb. — 63 brake hp. Has dynamic, new Allis-Chalmers POWER-CRATER engine . . . gives you high-octane performance on regular gasoline.

POWER-CRATER is an Allis-Chalmers trademark.

Added Versatility Standard bucket is quickly interchangeable with Lift Fork, Crane Hook, Dozer Blade or a $1\frac{1}{2}$ -yd. Light Materials Bucket. Each conversion adds to usefulness of the TL-10.



Write to us —
for literature on the TL-10
and see your nearest
Allis-Chalmers
Industrial Tractor Dealer.

TRACTOMOTIVE

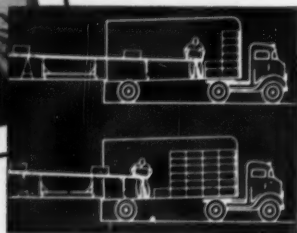
TRACTOMOTIVE CORPORATION, DEERFIELD, ILLINOIS

Tracto-Loaders • Tracto-Shovels, Side Booms and Hydraulic Rippers
for Allis-Chalmers Crawler Tractors • Loader and Shoulder Maintainer
for Allis-Chalmers "D" Motor Grader
Circle No. 198 on Reader Service Card for more information

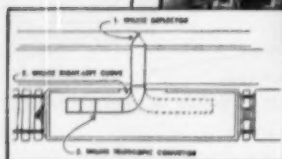
WILKIE conveyors with new FLOP-OVER curve cut loading time AT SCOTT PAPER



TRAILERS



BOX CARS



Wilkie Pat. Nos.
2613788-89
and other patents
pending.

Cases leave the permanently installed conveyor system at Scott Paper Company's new modern Chester, Pa., warehouse and move onto Wilkie equipment to reduce "carry-time" to a minimum.

FOR TRAILER LOADING

Wilkie Telescopic Conveyors, placed inside the trailer, carry the load to the stacking point. As the trailer fills up, the Wilkie telescopes back so that cases are conveyor carried.

FOR BOX CAR LOADING

Coupled with Wilkie's new Flop Over Curve, the Wilkie Telescopic Conveyor carries Scott cases to the empty end of the box car. As that end fills, the telescopic conveyor is shortened until the center door is reached.

The Flop Over Curve is then reversed—in a matter of seconds—because no adjustments are necessary. The other end of the car is then filled by the same procedure. Cases are conveyor carried to the stacking position.

As a result of this fluid method, the number of cases handled has been increased and trailers and box cars are loaded in considerably less time than formerly required.



TELESCOPIC CONVEYORS

Apply these savings to your loading operation. For complete information, write Wilkie Company, 5520 Arch Street, Philadelphia 39, Pa.

Circle No. 209 on Reader Service Card for more information

MEN IN THE NEWS

Continued

try. The plan includes a state-wide distributor plus local dealers located in each important trading area.

... at Thomas Truck & Caster Co.

C. Parke Anderson was appointed sales manager of Thomas' newly acquired division, The Lanham Skid Company, with offices in Keokuk, C. P. Anderson Iowa. He was formerly assistant sales manager of Thomas, with whom he has been associated since 1943.



... at Electric Storage Battery Co.

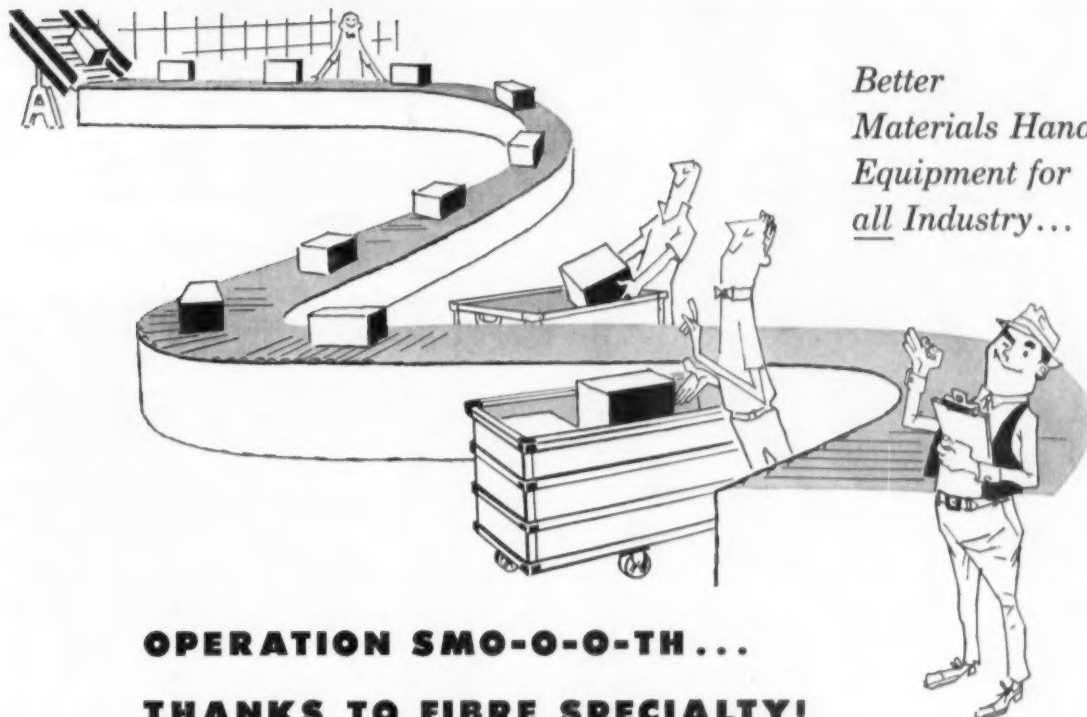
Promotion of two sales executives has been announced by the Exide Industrial Division. Charles H. Leet, Pittsburgh branch manager since 1949, has been transferred to the firm's larger Chicago office as assistant branch sales manager. R. L. Kegg, formerly branch sales engineer at Pittsburgh, succeeds Leet as branch sales manager there.

... at Chrysler Corporation

Vice president of sales of the Marine and Industrial Engine Division is Clyde C. Williams. He has served the company for 26 years in various capacities, the most recent of which was general manager of the division.

... at Morse Chain Company

Election of Frank M. Hawley as chairman of the board and Stanley J. Roush as president



*Better
Materials Handling
Equipment for
all Industry...*

OPERATION SMO-O-O-TH... THANKS TO FIBRE SPECIALTY!

Using the right equipment for each materials handling job in your plant can contribute much to an efficient, productive operation.

Fibre Specialty Equipment helps save time, assures safe product handling. It leads also to economy and good business generally.

We design, engineer and build a broad line of standard and special equipment, or complete materials handling systems for *your* specific plant requirements.

Why not let an experienced Fibre Specialty Engineer suggest the right set-up for your plant?

FIBRE SPECIALTY DIVISION NATIONAL VULCANIZED FIBRE CO.

WILMINGTON 99, DELAWARE



TO KEEP THINGS MOVING . . . This tough, easy moving, multi-purpose hard vulcanized fibre truck will serve you well in many jobs. Available in Hercules or Dreadnaught construction in a wide range of standard or special models to fit your particular product or application.



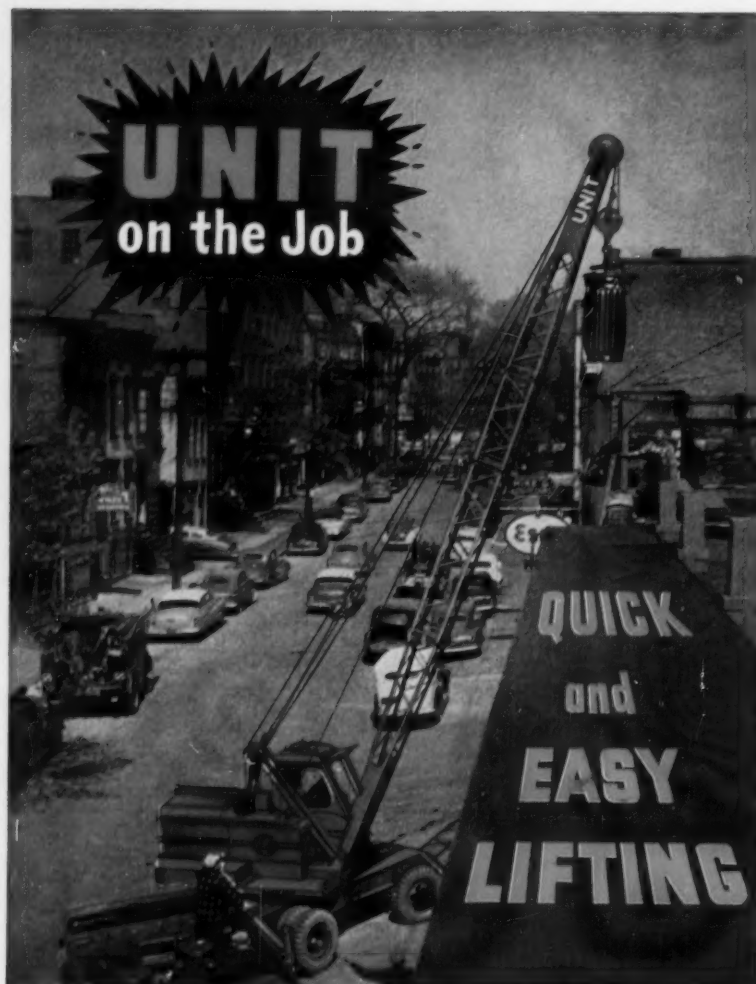
A COMPLETE HANDLING SYSTEM . . . These strong, light weight tote boxes on dolly trucks are inexpensive, flexible, highly efficient materials handling systems. These complete units are adaptable to many industrial applications.



TOTE BOXES FOR MANY JOBS . . . Hard vulcanized fibre, special rolled plated top molding, plated steel angles, plated steel reinforced hand holes, corners, and hardwood runners.



NEW FREE CATALOG No. 54
Illustrates and describes in detail our wide range of equipment designed for better materials handling. For your free copy write to Dept. L-12.



For SM-O-O-THER OPERATION you'll prefer UNIT 357 Mobile Crane equipped with TORQUE DRIVE. It's a machine that travels anywhere . . . works efficiently where space is limited. Controlled and operated by ONE man. Powered by ONE engine. Provides full-circle, fast-cycle operation. Easy hydraulic steering from within the FULL-VISION CAB. Promotes safety. For HIGH PRODUCTION and LOW MAINTENANCE get the facts regarding UNIT 357.

Write for Bulletin No. L-302.

UNIT CRANE & SHOVEL CORPORATION
6531 WEST BURNHAM STREET • MILWAUKEE 14, WISCONSIN, U. S. A.



1/2 or 3/4 YARD EXCAVATORS... CRANES UP TO 20 TONS CAPACITY
CRAWLER OR MOBILE MODELS . . . GASOLINE OR DIESEL



All Models Convertible to ALL Attachments!

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MEN IN THE NEWS

Continued

and general manager was announced by Roy C. Ingersoll, president of Borg-Warner Corporation.

. . . at Wayne Crane Division, American Steel Dredge Co., Inc.

New sales manager is Felix Sweeney, according to an announcement from Don L. Douglass, vice president and manager of product sales. Prior to this appointment, Felix Sweeney was eastern district sales representative, and before that represented Wayne Crane in the midwest district.



. . . at Conco Engineering Works

The board of directors announced the appointment of R. A. Hossinger and H. J. Kettleborough as vice presidents to succeed O. J. Ellingen and W. G. Van Etten, both deceased.

. . . at the Timken Roller Bearing Co.

Gilbert Haller Turner, director of industrial relations since 1948, died October 9, at the age of 48. He had been a Timken employee for 26 years, and handled the firm's labor negotiations for more than a decade before assuming the industrial relations post.

. . . at Caterpillar Tractor Company

Election of Charles A. Woodley as vice president and appointment of Lloyd J. Ely as manager of the Peoria plant was announced.

B.F. Goodrich

TW ANALYSIS helps forge plant increase industrial tire service over 500%



This truck is hauling a 5-ton die-holder in a large Cleveland forge plant. B. F. Goodrich oil-resisting tires on front wheels have delivered over 2688 hours of hard service where ordinary tires fell apart after only 500 hours.

THE maintenance men of a large Cleveland forge plant had a real problem on their hands. Industrial tires in heavy-duty service were "falling apart" under heavy loads after only 500 hours.

The local B. F. Goodrich man made a Tire and Wheel Analysis. As a result of his findings, new Deluxe Cushion Pressed-On tires with an oil-resisting compound were placed on a truck in regular service. Most of the trucks in this type of service have since been equipped with B. F. Goodrich oil-resisting-compound tires. Service hours have been increased more than 500%.

Pressed-On Deluxe Cushion tires are available with non-directional traction tread and in some sizes with smooth tread

... and are made in a variety of compounds to meet any type of service condition. A special process that bonds the tread to the steel base assures positive adhesion of tread for life of the tire.

TW ANALYSIS CAN SAVE YOU MONEY

Just contact your local B. F. Goodrich retailer or mail the coupon below. Without cost or obligation, a trained B. F. Goodrich man will study your materials handling operations and make recommendations that can cut your industrial tire costs ... reduce maintenance expense. The advice you receive will be unbiased, for B. F. Goodrich makes a complete line of industrial tires for every type of service. A special TW Analysis is available for manufacturers of industrial equipment.



Here's a close-up of the front tire on the truck pictured above. 2688 hours of service and still rolling!



This B. F. Goodrich Deluxe Cushion tire has been in service for 770 hours. Tread shows little wear.

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The B. F. Goodrich Company
Tire & Equipment Division
Department TW-432
Akron 18, Ohio

Specify
B. F. Goodrich
tires
when
ordering
new
equipment

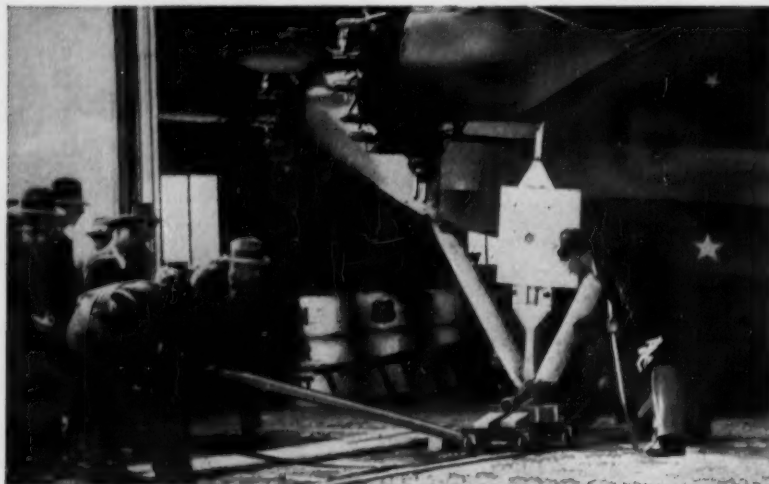
Please send me:
☐ Additional information on your Tire and Wheel Analysis Plan
☐ Free copy of "Industrial Tire Guidebook"
☐ Free copy of "How to Get Extra Service out of Solid Industrial Tires"

Name _____
Company _____
Street _____
City _____ Zone _____ State _____

MATERIALS-HANDLING NEWS

★ Panel Discussions by Bassick, World's Largest Manufacturer of Casters and Floor Protection Equipment ★

From "Southern Cross" to B-36-- Bassick takes over on the ground

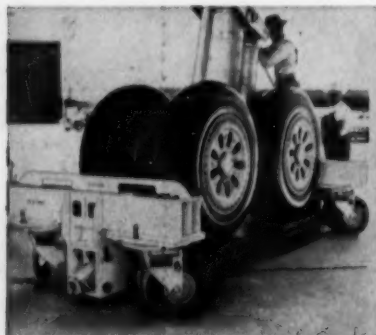


"Southern Cross," standing on dollies equipped with Bassick casters, gets once-over from Australian pilot Kingsford-Smith (right).

Flying the big ocean

In early June, 1928, the 3-engine "Southern Cross", piloted by Kingsford-Smith, made the world's first trans-Pacific flight from San Francisco to Brisbane, Australia.

Proven conventional Bassick casters were selected for pre-flight handling of the "Southern Cross". Today Bassick casters are specifically designed to meet exacting requirements for safe efficient handling of modern aircraft.



80,000 lbs. is no strain for these 4 Bassick casters.



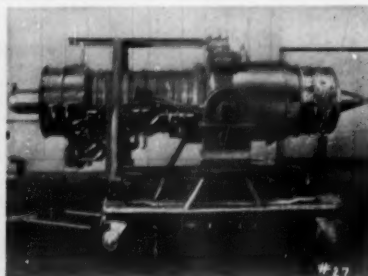
Another Convair-built 6-engine B-36 takes off.

25 years later

Convair of Fort Worth, Texas, chose Bassick to produce the highly specialized dual 18" wheel "Floating-Hub" shock-absorbing caster for their B-36 handling dollies. These 675-pound giants have an operational load rating of 20,000 pounds each yet permit easy, precise handling of these huge Air Force bombers in production. Bassick's "Floating-Hub" shock absorbing casters help preclude airframe damage during assembly by eliminating winding stress, shock and vibration due to dolly handling—write for "Floating-Hub" catalog FH-53.

Circle No. 29 on Reader Service Card for more information

Fretting corrosion?



"Fretting corrosion", killer of modern jet engines, is another problem licked by Bassick's patented "Floating-Hub" casters—the only caster designed to absorb both horizontal and vertical shocks.

When wheels equipped with "Floating-Hub" roll over obstacles or rough surfaces, their deflection is controlled and their recovery immediate—preventing damaging shock forces, vibration and winding stress from being transmitted to the vehicle or precious cargo. Vibration frequencies are interrupted and immediately damped out by the inherent snubbing action, precluding resonance and "fretting corrosion". Ask for catalog FH-53.

New caster feature

Grease dripping from bearings exposes them to premature wear—increasing maintenance and repair cost. It's also an accident hazard and harms floor surfaces and rubber tires. Cure: Bassick grease retainer cup now standard on all Bassick Series 99 casters.

Get all the facts on the most complete line of shock-absorbing and conventional casters from your Bassick industrial distributor. He's got the stock and the know-how to give you fast efficient service on all your requirements.



THE BASSICK
COMPANY
Bridgeport 2, Conn.
In Canada:
Belleville, Ont.



MAKING MORE WHEELS OF CASTERS... MAKING CASTERS DO MORE

75 YEARS OF CASTER LEADERSHIP



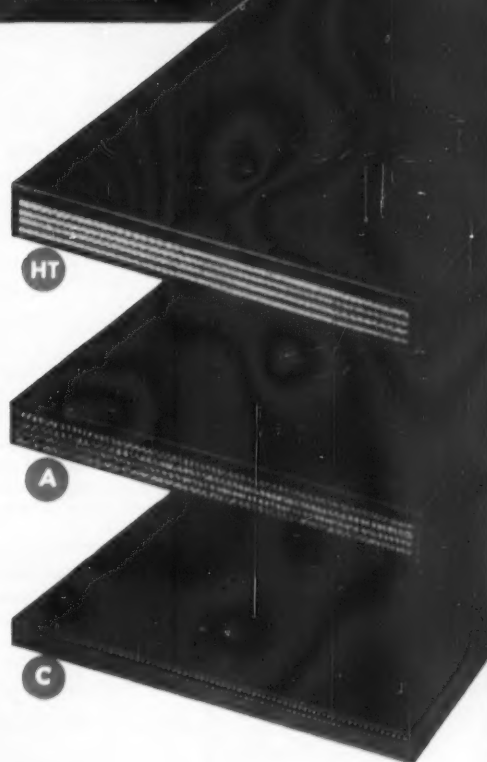
Thermoid Conveyor Belting cuts handling costs on rugged mining jobs



There's a Thermoid Conveyor Belt designed to lower your handling costs on every mining job. Here are three examples:

HT —For extremely abrasive materials such as coal, granite, trap rock, flint rock, quartz ore; **A** —For slag, lime rock, crushed stone and other highly abrasive materials; **C** —For moderate abrasives such as sand, loam, soda, gravel.

Thermoid's exclusive impregnation process welds carcass and cover into an exceptionally strong, durable belt. Finest quality reinforcement and specially compounded rubber stocks assure long life . . . lower your handling costs per ton. Your Thermoid Distributor carries a complete line of Thermoid Conveyor Belting, Multi-V Belts and Hose to meet the most severe requirements of any mining operation. Call him or write direct for full information.



Thermoid

Conveyor & Elevator Belting • Transmission Belting
F.H.P. & Multiple V-Belts • Wrapped & Molded Hose

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Rubber Sheet Packings • Molded Products
Industrial Brake Linings and Friction Materials

Thermoid Company • Offices & Factories: Trenton, N. J., Nephi, Utah

association and society NEWS



Another Palletainer first! Equipped with dump type gate and heavy paper liner, Palletainers are proving new economies and convenience for handling loose materials.

● Interested in getting more out of your materials handling dollars? Then send today for your copy of Union Steel's big illustrated Palletainer booklet.

It will quickly and clearly indicate how you can make important savings in materials, time, space and above all . . . man hours!

There are dozens of interestingly different applications that will show you new handling, storing, warehousing, and shipping methods. Also, detailed information on Palletainers exclusive construction features plus complete specifications on the many versatile models available.

The big new USP Palletainer booklet will be sent to you immediately and without obligation. However, should your problem require immediate assistance, our nearest representative will contact at your request.

IT'S
FREE



UNION STEEL
PRODUCTS CO.
ALBION, MICH.

Gentlemen: Please send me my copy of your big, new USP Palletainer booklet at once.

Name _____ Title _____

Company _____

Address _____

City _____ Zone _____ State _____

Please have your nearest Palletainer representative

contact _____ ☐

● F. O. Schuster, chief engineer of the material handling division of the Buda Company, recently told the National Conference on Industrial Hydraulics that fluid power developments will be responsible for many future advances in the material handling field. Schuster said advances in hydraulics are making the modern lift truck almost a jack-of-all trades.

● Sixteen men were elevated to the rank of Fellow of The American Society of Mechanical Engineers, making a total of approximately 400 to receive the honor, out of a total membership of nearly 40,000. To be qualified as a nominee to the rank of Fellow, one must be an engineer with acknowledged engineering attainment, 25 years of active practice in the profession of engineering or teaching of engineering in a school of accepted standing, and a member of the Society for at least 13 years.

● "Recent Developments in Packaging" were discussed by qualified engineers before the Society of Industrial Packaging and Materials Handling Engineers, Milwaukee Chapter. Examples of the latest developments and techniques in the industry were given.

● A joint meeting of the American Material Handling Society and the American Society of Mechanical Engineers was held in Detroit on October 7. A coffee talk was presented by Wally Weber, freshman coach of the University of Michigan, and films of the

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Move More with a **MICHIGAN**



Handling scrap metal and waste sand every day at **AUTO SPECIALTIES FOUNDRY**

JOB FACTS

- Job:** Unloading and piling scrap, loading trucks for delivery to furnaces; handling waste sand; steel setting and erection, plant maintenance work
- Machine:** MICHIGAN T6K crane, with 25' boom—29" magnet or $\frac{3}{8}$ yard clamshell
- Owner:** Riverside Foundry Division of Auto Specialties Mfg. Co., St. Joseph, Michigan
- Performance:** Versatile and completely satisfactory for many jobs. Upkeep expense considered very low.

A busy machine of many uses, at the Riverside Foundry Division of Auto Specialties Manufacturing Co., the MICHIGAN T6K was steadily on the job for five solid years, working every day, before its first overhaul.

Equipped with magnet or clamshell, the husky air-controlled MICHIGAN* does all handling of scrap: unloads it from cars, piles it, loads it into trucks for

delivery to furnaces. With a clamshell it handles waste sand to be dumped, then follows to spread the waste. In addition it excavates and loads new sand; and handles steel erection and plant maintenance jobs. A versatile and necessary tool that performs with great satisfaction and little upkeep, plant officials report.

Have you looked into how this up-to-date handling method can save time and money for you? It's worth investigation—which costs nothing, may lead to substantial cuts in costs. Talk to your MICHIGAN dealer—and send for interesting air control booklet, "More Yardage Through Air Power." Use the coupon.

*A Trademark of Clark Equipment Company

**CLARK
EQUIPMENT**

Construction Machinery Division
CLARK EQUIPMENT COMPANY
440 Second Street
Benton Harbor, Michigan

Please send the booklet "More Yardage Through Air Power."

Name

Firm

Address

City Zone State

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GASOLINE or DIESEL?

Hercules engineers will assist you in the proper selection of the most economical type of engine for your particular equipment.

Many of our customers have asked us, "Which type of engine would be best for me?" Perhaps this same question has entered your mind at one time or another.

Of course, there are many governing factors which should be considered in selecting the proper type of engine for a particular piece of equipment. First of all, how much horsepower is needed? Is there a type of fuel which costs less locally . . . gas, gasoline, L.P. Gas, kerosene or fuel oil? How much money will be involved in the initial purchase? How much money can you expect to save by using a low-cost fuel? Will it be enough to offset the extra cost of a special type of engine? These and many other questions should be objectively answered before any engine is purchased.

We have no particular cause to champion and do not attempt to take sides or promote the use of one fuel over the other. As you know, we manufacture all types of internal combustion engines to operate on any fuel that is readily available. (Natural gas, L.P. Gas, kerosene, diesel fuel, gasoline, etc.)

The basic Hercules gasoline engines are adapted by minor changes to operate on different spark-ignition fuels. The Hercules diesel engines are compression ignited — specifically designed for operation on diesel fuel.

We have, however, maintained several similarities between the Hercules spark-ignited and the Hercules diesel engines which we think are very important. First of all, gasoline and diesel engines of comparable piston displacement have similar mounting dimensions and operating charac-

teristics. Generally speaking, this makes it possible for equipment to be powered by either Hercules gasoline or diesel engines without creating any major installation problems. Thus, equipment manufacturers are able to supply customers with the proper type of engine to assure "top-notch" economies, according to the customers' operating conditions.

Another similarity between our gasoline and diesel engines, is that they both are of the 4-cycle design. The 4-cycle design is universally accepted and understood. This feature provides for less complicated engine servicing and in addition, service is readily available throughout the country.

What does all this mean to you? Maybe we can sum it up in our motto, "Engine Manufacturing Specialists Since 1915". Actually, we're custom engine builders with manufacturing facilities. Our engineering and sales policy is to design and sell engines to meet the exacting needs of our customers.

As a result, we have 70 basic models of gasoline and diesel engines which range from 3 to 500 H.P. They are available in many different designs . . . vertical and horizontal engines, special fuel handling equipment, various types of flywheels, etc. . . in fact, we probably have an engine that will fit your particular needs to a "T".

Whether it's Agricultural, Oil Field, Automotive, Construction, Industrial, Marine or any other engine application, our engineers will gladly assist you in the proper selection of power for your equipment. Give us the details, so that we understand your problem, and we'll provide the answers to your power problems.



HERCULES ENGINES

HERCULES MOTORS CORPORATION

113 Eleventh Street, S. E. • Canton, Ohio

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ASSOCIATIONS

Continued

Army-Michigan game were shown. Principal speaker was E. H. Van Wagner of General Motors, whose subject was a trip to the U. S. Air Bases in Alaska.

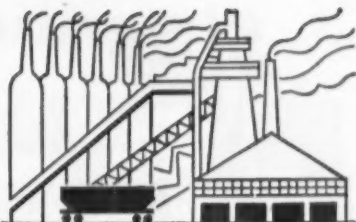
● "Economic Considerations in Selecting Materials Handling Equipment" was the title of a speech recently presented before the Philadelphia Chapter of the American Material Handling Society. The speaker was Howard S. Clark of duPont, whose paper won the Wunsch Award in June 1953.

● Recent speakers before the Indianapolis Chapter of the Society of Industrial Packaging and Material Handling Engineers were E. F. Gerber of American Air Lines, and John B. Ellor of Lamson Corporation. Gerber talked on "Air Freight Packaging In Unit Loads", and Ellor spoke on "Conveyors That Pay Dividends". C. F. Murphey of Inland Container Corporation will deliver the December address: "The Little Brown Jug".

● More than 380 personnel in the shipping container industry have completed the training course offered by the Wirebound Box Manufacturers Association, qualifying them as "Wirebound Engineers". The course is directed by Harry A. Wolsdorf of Package Research Laboratory at Rockaway, New Jersey and E. F. Gallivan of W.B.M.A. Chicago headquarters.

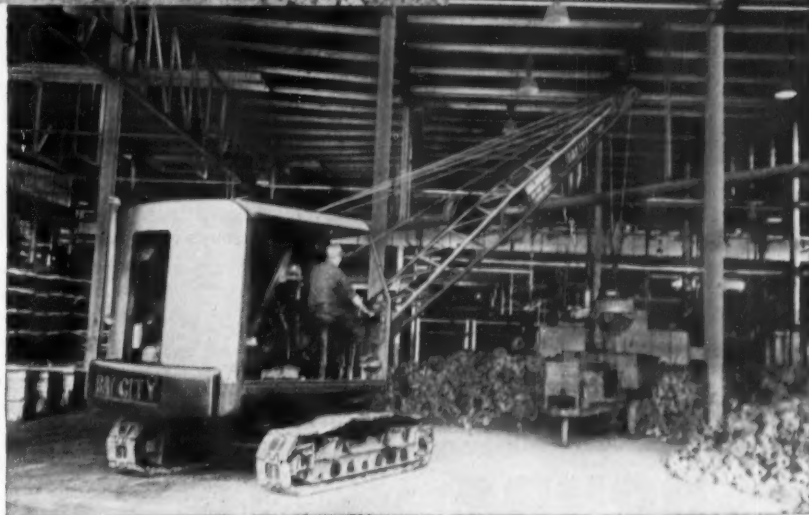
● A plant visit to Northern Electric Co. Ltd., Wire and Cable Division, is scheduled December 1 by the Montreal Chapter of the American Material Handling Society. The January 12 meeting will cover the material handling program at RCA, with Norman B. Shikes as speaker.

TOO HOT TO HANDLE? NOT FOR A BAY CITY!



BAY CITY Shovels and Cranes handle hot materials with the same dependability, the same speed and precision that is typical of their performance on any job. Yes, whatever the task these powerful, heavy duty machines are built for high daily output and long service. Engineered for accurate balance, easy operation and low cost maintenance, the BAY CITY will help increase production and cut costs in your operations.

Above: $\frac{3}{4}$ -yard BAY CITY Shovel is loading hot slag in an Eastern steel mill. Right: $\frac{1}{2}$ -yard BAY CITY Crane with 29" magnet is handling hot castings at one of the world's largest malleable iron foundries.



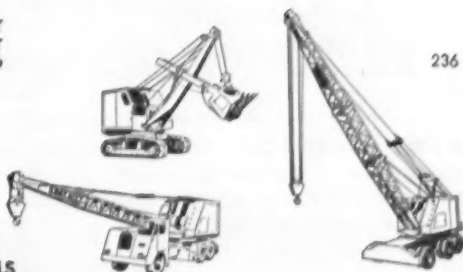
Write for these catalogs describing BAY CITY Crawlers of $\frac{1}{2}$ yards and up, BAY CITY CraneMobiles and CraneWagons up to 25 ton capacities.

BAY CITY

BAY CITY SHOVELS, INC. • BAY CITY, MICHIGAN

SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS

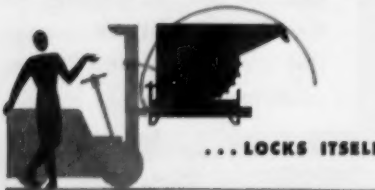
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236

DECEMBER, 1954

37



Unload 2 tons with 1 hand

It's easy with a Roura Self-Dumping Hopper. Simple, one-man operation does it with amazing speed . . . cuts cost of hand unloading by at least 50%. That's why hundreds of leading industries have found it the safe, sensible, economical way to handle wet or dry, hot or cold bulky materials.

It fits securely on any standard fork or platform lift truck . . . turns it into an efficient, semi-automatic dump truck. And, remember . . . Roura makes 'em rugged . . . extra heavy gauge welded construction . . . to withstand years of toughest treatment. They're available in sizes from 1/4 to 2 cubic yards.

Let Roura help you cut costs.

ROURA

Self-Dumping

HOPPER

WANT DETAILS?

Clip this coupon . . . attach it to your letter-head . . . sign your name . . . and mail to . . .

ROURA IRON WORKS, INC.
1411 Woodland Ave., Detroit 11, Michigan

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38

Calendar of Events

November 28-December 3

American Society of Mechanical Engineers,
Annual Meeting,
Statler Hotel,
New York, N. Y.

November 29-December 1

American Management Association,
Orientation Seminar,
330 West 42nd Street,
New York, N. Y.

December 2-7

21st National Power Show,
Commercial Museum,
Philadelphia, Pa.

December 13-14

Material Handling Institute,
Statler Hotel,
New York, N. Y.

January 11-28

7th Institute of Industrial Transportation and Traffic Management,
The American University,
School of Social Sciences and Public Affairs,
1901 F Street, Northwest,
Washington, D. C.

January 20

3rd Canadian Package Design Forum,
Toronto, Canada

January 24-27

American Management Association,
General Management Conference,
Statler Hotel,
Los Angeles, California

January 24-27

Plant Maintenance and Engineering Show,
International Amphitheatre,
Chicago, Illinois

February 8-9

National Wholesale Distribution Clinic and Exposition,
The Shoreham Hotel,
Washington, D. C.

February 15

2nd National TIPAC Forum,
Toronto, Canada

February 19-23

48th Annual Exhibit,
Canning Machinery & Supplies Association,
Conrad Hilton Hotel,
Chicago, Illinois



**Carries
personnel or
materials
for only 5¢ a day!**



- noiseless
- turns on a dime
- fits on elevators
- no maintenance
- low priced

The MID EMPIRE ELECTRIC CAR is Safe, Simple, Easy to Operate

Welded steel body and frame • Internal expansion brakes on both rear wheels • Wide four-ply heavy-duty tires • Long service batteries with extra plates • Dual wheel driving • Differential type rear axle • Steered with ball bearing tiller for easy maneuverability • Comfortable foam rubber seats • Hand controls for power and brakes give instant response • Weighs only 730 pounds • Extra power twenty-four volt motor • Unique spring suspension eliminates shock.

Ask for a **FREE** demonstration

MID EMPIRE ELECTRIC

MID EMPIRE CORPORATION
940 West St. Paul Avenue Dept. F-12
Milwaukee 3, Wisconsin

• Please send full information about the Mid Empire Electric Car to:

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Title
Company
Address
City Zone State

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FLOW

Pace-Setting HD-5G Tractor Shovel

NOW BETTER 3 WAYS

FOR EFFICIENT MATERIAL HANDLING



HD-5G TRACTOR SHOVEL

Rated capacity	1 1/4 cu yd
Belt horsepower	50
Weight, complete	16,200 lb
Dumping height	9 ft, 2 in.

From the time of its introduction seven years ago, the Allis-Chalmers HD-5G Tractor Shovel has been tops in popularity. Many thousands are daily proving their ability and versatility on all kinds of material handling and excavating jobs.

Now, design refinements make the HD-5G a three-way better value than ever before:

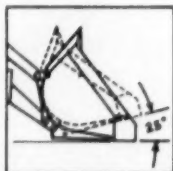
1. Has Bigger Rated Capacity

New bucket handles a big 1 1/4-yd load — streamlined design now helps roll in large loads with less tractor effort. The back of the bucket has been brought forward and the sides extended to cut spillage, put more payload where it's wanted.

2. Helps the Operator Do More

Cleaner dumping with the new bucket saves the operator time and effort shaking out loads.

For added versatility, there is a two-position bucket available with both standard automatic return to digging position and operator-controlled tip-back. If the operator chooses to use the controlled tip-back, he can load the bucket, then tip it back approximately 25° before raising, assuring maximum output under special conditions such as downhill loading or loading loose materials.

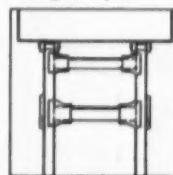


The HD-5G helps the operator do more in other ways, too — giving him full vision, fast and easy control, cleaner platform and more comfortable seat from

which to work, and more working time with truck wheels, support rollers and idlers that need greasing only once every 1,000 hours.

3. Works at Lower Cost

The HD-5G now works at even lower cost than ever before — not just because it *does more*, but because it has features that mean *less maintenance, longer life*. For instance, new type tubular bracing on the bucket booms provides added strength and support, keeps the bucket in line. The floor at the rear of the new bucket has been raised seven degrees to reduce wear on the bottom sheet. Heavy-duty truck wheels and idlers are available for particularly tough working conditions. One-piece, full-length main frame permits unit construction so that major assemblies can be removed without disturbing adjacent units, putting tractor back on the job in hours rather than days.



Ten Quick-Change Attachments Add to HD-5G Versatility

Bulldozer	Crane Hook	Tine Fork
Angledozer	Light Material Bucket	Rock Fork
Narrow Bucket	Trench Hoe	— also rear-mounted Ripper
Rock Bucket	Lift Fork	

See your Allis-Chalmers dealer for more about these and other production-boosting features of the popular HD-5G Tractor Shovel.

ALLIS-CHALMERS

TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

Circle No. 9 on Reader Service Card for more information



in Equipment

Summaries of latest information from manufacturers. For more details, use the free-mailing Reader Service Card.



Combination Battery & Charger

A battery with a permanently mounted charger has been designed by K-W Battery Company for use with walkie type lift trucks. The battery remains on the truck and can be given a boost whenever truck is not in operation. It can be charged by plugging into any 110 volt, 60 cycle outlet, and charger may be left on without damage to the battery. It is not necessary to disconnect battery from the truck since charger is permanently connected to the terminals.

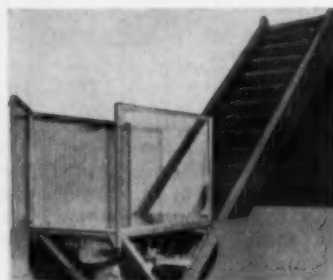
Circle No. 220 on Reader Service Card for more information



Bulk Storage Rack

A rack with long-span shelves of unusually high load capacity is offered by The Frick-Gallagher Manufacturing Co. for storage of heavy machine parts, dies, equipment or heavy material. Width of shelves between supporting angle posts is six feet. Each of the three steel shelves, which are adjusted vertically on six inch centers, has a rated capacity of 1500 pounds. Heights are from six to nine feet, and depths 18, 24 and 30 inches.

Circle No. 221 on Reader Service Card for more information



Easily Installed Elevator

An elevator which can be easily installed over any existing stairway or bolted to any side wall has been designed by Charley Bros. Mfg. Co. It is equipped with modern safety devices, and will operate on any available electric current at speeds up to 60 fpm. All push buttons and controls operate on a low voltage system. Called the Cargo Lift, it comes in three standard sizes of 500, 1000 and 2000 pounds, and its low initial cost is an outstanding feature.

Circle No. 222 on Reader Service Card for more information



All-Weather Cab

A molded steel, all-weather cab is being marketed by the Construction Machinery Division of Clark Equipment Company, which may be installed on all models of Michigan Tractor Shovels. Designed for easy field installation, the heavy-duty cab has all around and overhead vision through safety glass windows set in rubber molding. The rear section, which has sliding windows, rolls freely on track and can be removed in five minutes. A windshield wiper is standard equipment and a heater and defroster unit is optional.

Circle No. 223 on Reader Service Card for more information

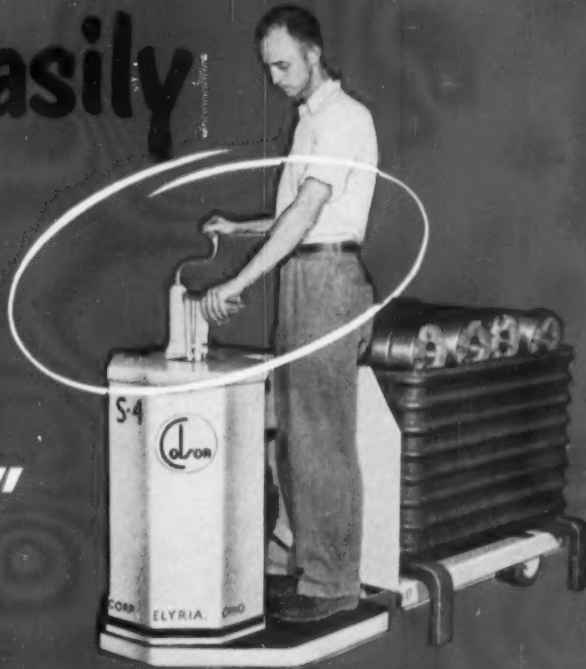
Look How Easily

The



"HANDLER"

Handles Loads
up to 4000 pounds



Just one lever does it all... **SHIFTS, LIFTS, BRAKES!**

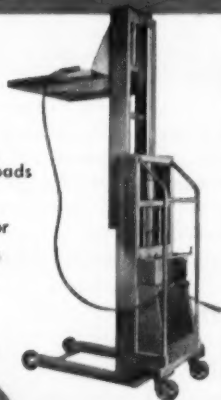
The "Handler" is the first proved-in-service gasoline powered Lift Truck with hydraulic drive and hydraulic control. Just one lever does all the work — selects; speed range (low or high), direction (forward or reverse), load movement (raise or lower), and brakes (re-

turn to neutral applies brakes). Rider has unimpaired visibility at all times — backwards or forwards — and "dead-man" brakes are an important extra safety factor. Six horsepower gasoline engine provides plenty of power for rugged, round-the-clock operation.

Other Cost-Saving Colson Materials-Handling Products

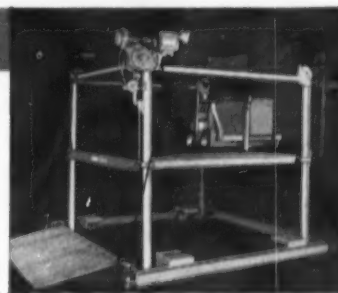
The Lifter

Makes quick, easy work of transporting and stacking loads. Available in single and telescopic models — hand or power operated. Capacities from 150 to 3000 pounds.



The Leveler

Industry's leading device for handling loads between levels. May be portable or permanently installed. Capacity 6000 pounds.



The Colson Corporation • Elyria, Ohio

Please send free literature on:

The Handler	<input type="checkbox"/>	} please check
The Leveler	<input type="checkbox"/>	
The Lifter	<input type="checkbox"/>	

NAME _____

COMPANY _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

Mail Coupon Today ➔

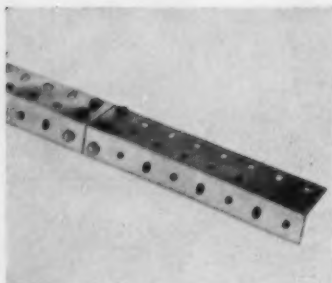
THE Colson CORPORATION
ELYRIA, OHIO

CRANES AND INDUSTRIAL MATERIALS-HANDLING PRODUCTS

Circle No. 56 on Reader Service Card for more information

DECEMBER, 1954

41



A New Angle

Colson Corporation is marketing Structo angle steel bars which can be assembled easily to form sturdy storage racks, work platforms, scaffolding, movable bins and a variety of other units. The angles can be used either for permanent installation or where the installation requires frequent alterations in respect to dimensions and load capacity. A wrench and a cutter are the only tools needed. For assembling, bolts are placed through a patented series of round and elongated holes. Standard angle length is 10 feet.

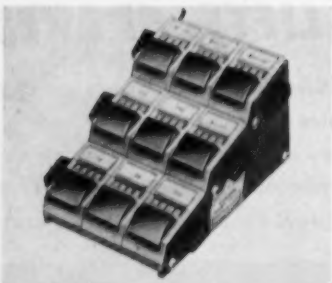
Circle No. 224 on Reader Service Card for more information



Gas Tractor With Electric Transmission

A gas-powered industrial tractor with electric transmission has been introduced by Automatic Transportation Company. Called the Dynamotive Model GLT, the new tractor is said to combine the new low maintenance costs, performance and long life of straight electric tractors with the constant power source of a gasoline engine. It has an overall length of 78 1/4 inches without coupler and a 50 inch wheelbase. It can negotiate approximately 38 percent grades; drawbar pull is 2000 pounds; travel speed 7 mph.

Circle No. 225 on Reader Service Card for more information



Fast Answers

A multiple-unit reset counter unit that will do any counting job you want in any combination up to six banks high, 12 units wide, is manufactured by Veeder-Root Inc. Called the Vary-Tally, the counter can be used in manufacturing, sales, accounting or researching. The figures can be read from any angle and are not covered by fingers in operation. The unit is easily portable; all parts are corrosion-resistant.

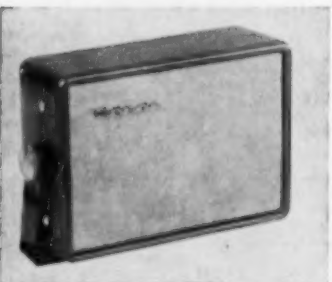
Circle No. 226 on Reader Service Card for more information



Heavy Duty Trolleys

Two new heavy duty trolleys rated at 375 amperes, two pole and three pole, are available from Feedrail Corporation. The trolleys are equal to the full current carrying capacity of the Feedrail "375" track. Designed for speeds up to 300 fpm, the units are said to offer maximum safety and minimum maintenance in facilitating the movement of heavy tonnage cranes and other electrical equipment having motor loads up to 200 hp at 440 volts, A.C. Both of the trolleys are track supported.

Circle No. 227 on Reader Service Card for more information



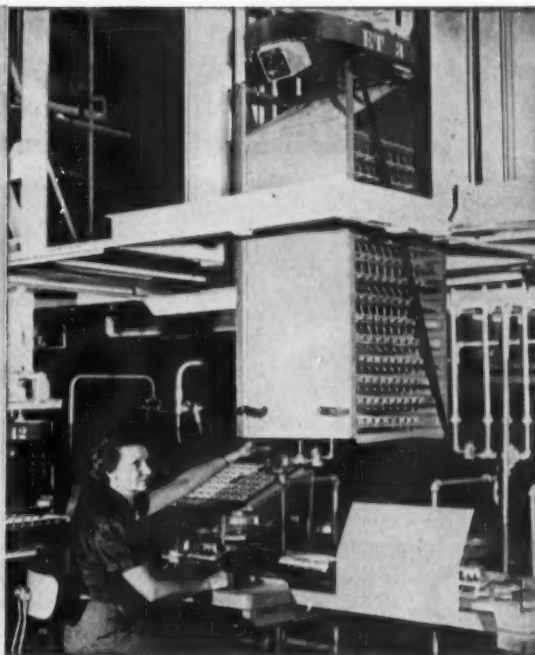
Mobile Messages Clearer

In order to improve intelligibility of messages, Motorola is shipping as a standard accessory with the mobile two-way radio units a new inverted cone speaker with a 43 percent larger cone area. This permits more uniform reproduction without excessive attenuation of particular voice frequencies. The speaker is said to be unique in that the magnet assembly is actually inside the cone in order to reduce space requirements. The housing unit measures 8 1/2 x 6 3/4 x 2 3/4 inches deep, including mounting bracket.

Circle No. 228 on Reader Service Card for more information

(Continued on page 146)

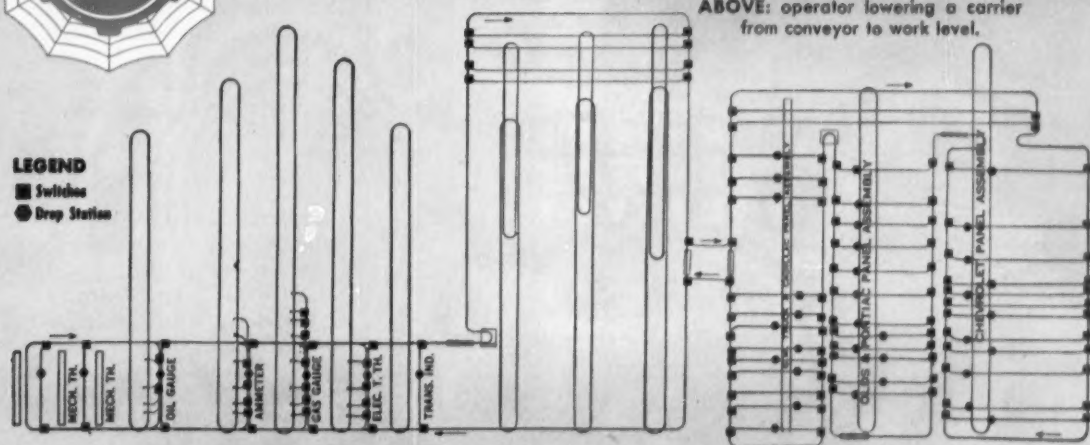
400 Electric Brains Control Carriers on POWER & FREE CONVEYORS



ABOVE: operator lowering a carrier from conveyor to work level.

LEGEND

- Switches
- Drop Station



GENERAL ARRANGEMENT OF CONVEYORS AND ASSEMBLY LINES.

Four Hundred electric brains (selector switches) automatically guide loaded and empty parts carriers to predetermined assembly points over the 1320 feet of Webb Power & Free Conveyors at this Spark Plug plant. As carriers move along main Power & Free conveyors they are automatically switched into proper "siding" according to setting of selector switch. Conveniently located drop stations on each "siding" permit lowering of individual carriers to bench level.

Being fully automatic in operation, this Webb conveyor system maintains an unailing flow of parts and sub-assemblies to workers. In addition, conveyors serve as storage banks that provide quick visual inventory and assure consumption of current production—rapid rotation of stock greatly reduces accumulation of dust on precision parts and results in inventory savings.

JERVIS B. WEBB CO.

Conveyor Engineers and Manufacturers

8935 ALPINE AVENUE • DETROIT 4, MICHIGAN

Send for fully
illustrated catalog
that provides com-
plete information
on Webb conveyors



FACTORIES: DETROIT • LOS ANGELES • HAMILTON, ONTARIO
OFFICES AND REPRESENTATIVES THROUGHOUT THE WORLD

Circle No. 207 on Reader Service Card for more information

CONSULT FOR THE BEST

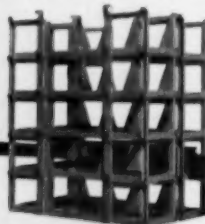
PS PORTABLE *Heavy Duty* BAR RACKS



Any rack easily accessible by one-man operated overhead crane with automatic double tong for quick pick-up and easy carrying.

ANY RACK EASILY ACCESSIBLE

Tier and store steel shapes the simple, safe, space-saving way. No rack selection problem using overhead crane. Design-adapted for easy selection from racks without disturbing tiers. Custom-built for any capacity and stock length.



Item C-497



Sturdy, all-purpose bar racks in tiers save man-hours, make for maximum storage efficiency.

Thousands of different size bars may be stored in tiers to save valuable floor space.



Efficient use of floor space makes necessary rack tiers for various capacities and bar lengths.

DESIGNED AND MANUFACTURED BY

Palmer Shile Co.
16012 FULLERTON AVE., DETROIT 27, MICH.

When Ordering Always give "item" number; this will help prevent error.

Write for catalog.

news from the SALES FIELD

Lewis-Shepard Products, Inc. has announced the appointment of Robert P. Ronowski as exclusive representative in the Wisconsin area. A graduate of the Illinois Institute of Technology, Ronowski became associated with Lewis-Shepard in the Chicago sales office in 1935. He maintains sales and service facilities at 312 E. Wisconsin Avenue, Suite 208, Milwaukee, Wisconsin.



R. P. Ronowski

Emil C. Buehrer, a pioneer in material handling in the San Francisco area, died October 12. A FLOW jobber since 1945, he represented Automatic, Barrett-Cravens and Nutting, among others. The firm of E. C. Buehrer and Associates will continue operations with O. L. Jenkins as president.

Pacific Coast distributors for Transiter Truck Company are: Hallidie Machinery & Equipment Co., Portland, Oregon; Hallidie Machinery Co., Seattle, Washington; and Roll-Rite Corporation, Oakland, California. Each distributor has exclusive rights in his territory, and will carry a line of parts with complete service facilities.

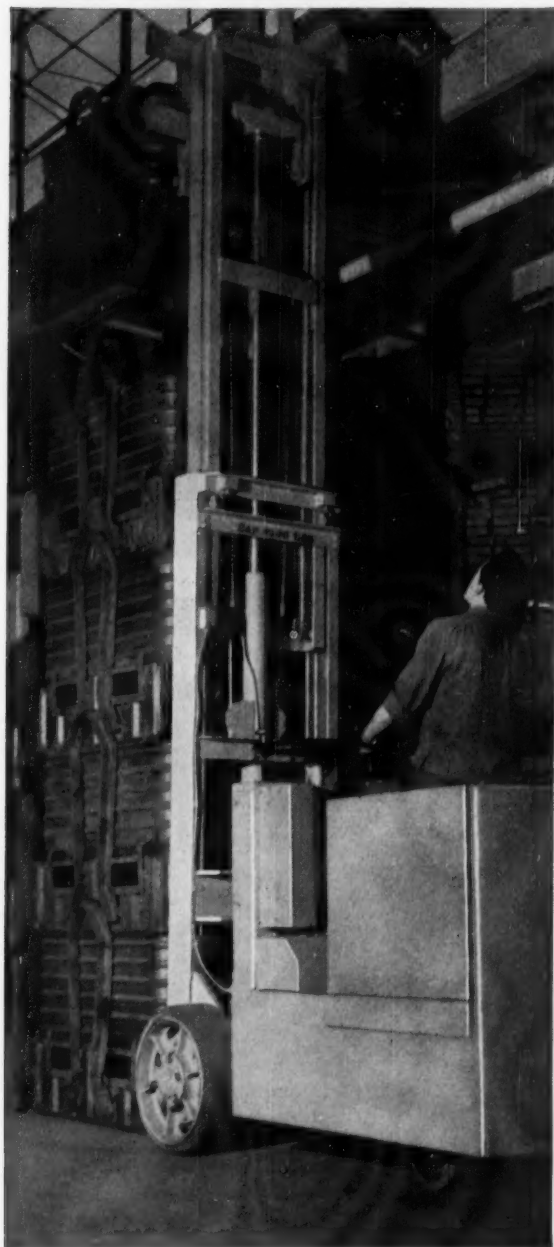
Jim Suter has been appointed sales engineer of The Frank G. Hough Company. In this position he will act as liaison between the sales department, Hough district representatives

← FLOW

Circle No. 87 on Reader Service Card

GET "FINGER-TIP" CONTROL, MORE LIFTS PER SHIFT

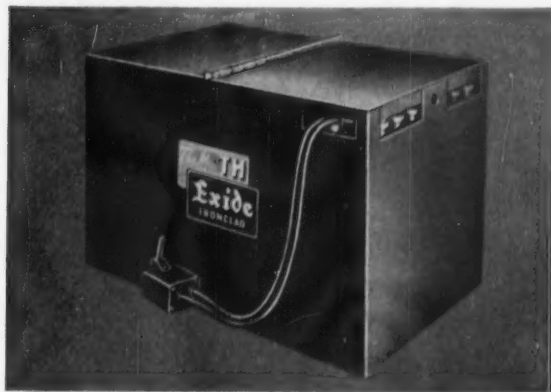
...with low cost Exide-Ironclad battery power!



ACCURATE STACKING, precise spotting, are essential for fast, safe materials handling. Exide-Ironclad Batteries respond instantly to any power need required for rapid, accurate handling operations. They enable trucks to handle as much load in the last hour of the shift as during the first ... with no unscheduled down time. Lower costs for operation, maintenance, and depreciation make Exide-Ironclads the best power buy—AT ANY PRICE.



THE POSITIVE PLATES are the heart of any battery. Only Exide uses a slotted tube construction. By use of tubes, more active material is exposed to the electrolyte, providing greater power. Also, more active material is retained, giving longer working life.



THE NEW THRIFTY HAULER! The improved industrial truck battery. Non-oxidizing plastic power tubes assure longest battery life, more capacity in the same space. For full details, call your Exide sales engineer—write for Form 1982 (Installation and Maintenance of Motive Power).

Your best power buy
...AT ANY PRICE!

Exide[®]
IRONCLAD[®] BATTERIES

Exide INDUSTRIAL DIVISION, The Electric Storage Battery Company, Philadelphia 2, Pa.

Circle No. 75 on Reader Service Card for more information

SALES FIELD

Continued

and other departments, and will also be concerned with product improvement and development of the company's line of tractor-shovels and tractors.

Recently named Chicago branch manager of **The Colson Corporation** is **John Schippers**, who formerly held the same po-

sition with Service Caster & Truck Corporation. Schippers' offices are located at 5131 West Madison Street, where both the Colson and Service lines are warehoused.

Hyster Company representative for Oklahoma is **Herd Equipment Company**, 922 N.W. Fifth Street, Oklahoma City. Branch offices of the company are maintained in Woodward and Tulsa, Oklahoma.

A regional sales office has been opened in Los Angeles, California, by the **Marine and Industrial Engine Division of Chrysler Corporation**. **Frank L. Harris**, sales representative in the Chicago territory will head the new office, located at the Chrysler Motors of California plant, Eastern and Slau-son Streets.



RITE-HITE ADJUSTABLE LOADING RAMPS

for greater loading dock efficiency

HORIZONTAL ADJUSTMENT lines ramp up with truck, reduces truck maneuvering to a minimum.

EASY OPERATION. Because of the exclusive Rite-Hite® precision counterbalance, only fingertip pressure is needed to raise and lower the ramp.

NO OBSTRUCTION TO DOCK EDGE OR DOORS. In the "up" position Rite-Hite doesn't protrude beyond dock edge. Can be modified at no extra cost to provide clearance for overhead doors when ramp is in raised position.

LITTLE OR NO MAINTENANCE. Simple, rugged, mechanical design. No pipes, pumps, gears or motors, no complicated mechanism.

SAFETY TREAD AND CURBS give sure footing and traction for men and machines, prevent material handling trucks from running off edge of ramp.

LOW INSTALLATION COST. Installation in new construction adds little or nothing to the cost of the building. In existing construction, installation costs are modest.

Send for Bulletin. Write Dept. F-124

RITE-HITE® DIVISION
LOOMIS MACHINE COMPANY
FOURTH AND PINE STS. • CLARE, MICH.

**3 TYPES,
5 MODELS**

**10,000 AND 20,000-
POUND CAPACITIES**

Priced from \$395.00

**Get all the facts
about RITE-HITE**



New Rochester district manager of **A. C. Towne Corporation** is **Marty Ryan**. A founder of the Rochester Chapter of the American Material Handling Society, Ryan will represent exclusively **Standard Conveyor Company** and **Walsh Metal Products, Inc.** He will headquarter at 217 East Avenue, Rochester, New York.



The sale and distribution of **Republic Steel Corporation's** material handling equipment will be handled in the states of Illinois and Iowa by **Ken-Dick Corporation**, which maintains offices in Moline, Illinois and Des Moines, Iowa.

Two new distributors have been announced by the **Construction Equipment Division of Baldwin-Lima-Hamilton Corporation**. **R. S. Armstrong & Bros. Co. of Albany, Georgia** will cover the southern portion of the state of Georgia, and **Fred Berryhill Equipment Co., Inc., Lubbock, Texas**, will cover northern Texas.

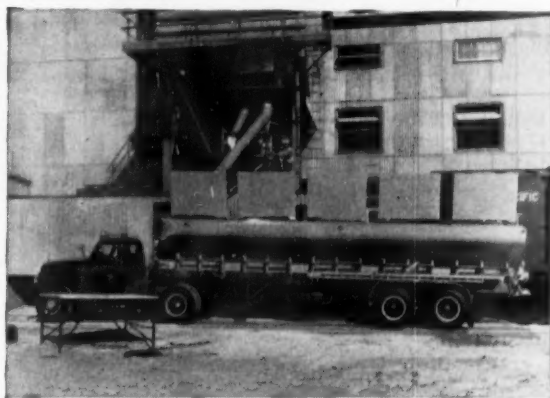
New Orleans, Louisiana distributor for **The Cambridge Wire Cloth Company** is **Woodward-Wight & Company, Ltd.**

Circle No. 133 on Reader Service Card for more information

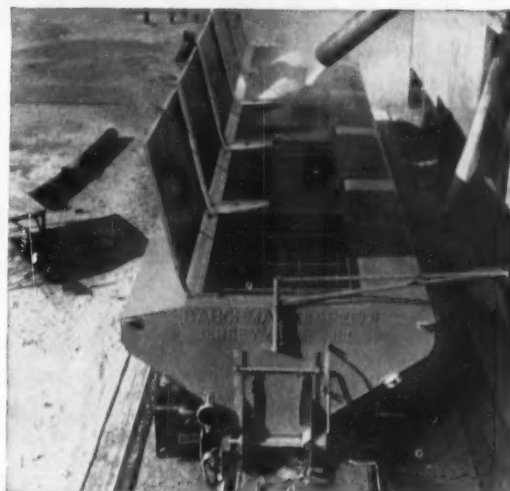
NEW BAUGHMAN TRANSPORT CARRIES 33,000-LB. LOAD OF SALT ...UNLOADS IN 30 MINUTES!

GRAND SALINE, TEXAS — The Transport Body pictured on this page is helping to make appreciable cuts in labor and handling costs, with corresponding savings in time, for the Anderson Truck Company, contract hauler for the Morton Salt Co. Operations take the company throughout the state of Texas. The body is the new Baughman Bulk Transport K-8-T, manufactured by the Baughman Mfg. Co. of Jerseyville, Ill.

Anderson reports that customer response has been very favorable — many clients actually request deliveries in the time-saving K-8-T. Anderson's own view on this Baughman equipment is clearly evidenced in the fact that this is the company's third such unit ordered in the past year.



DOES WORK OF BOXCAR — 4 TIMES FASTER! By delivering 33,000 pounds of salt in each load, and by automatic screw conveyor unloading in 30 to 40 minutes (as compared to the 6 to 8 hours required to unload a 100,000-pound boxcar), this handler is cutting an average of four hours from his handling time.



BAUGHMAN BULK TRANSPORT CUTS HANDLING COSTS. In the salt business, freight represents the highest single cost factor. This Baughman unit is helping to speed up handling time, while lowering labor and handling costs. The K-8-T is equally efficient in the hauling of flour, grain, phosphate, fertilizers, and similar materials.



SAVES UP TO 75% ON LABOR! This new streamlined operation requires only the attention of the driver. The Baughman Transport loads directly into bins, with openings often 18-feet above ground. Compared with boxcar handling, the K-8-T accomplishes the same volume of work with a saving up to 75% in time, and therefore 75% in labor.



For Full Information on Baughman Bulk Transport Bodies, Write For Bulletin A-376
**SALES AND SERVICE
FROM COAST TO COAST**



BAUGHMAN MANUFACTURING COMPANY

106 Arch Street

Jerseyville, Ill.

Circle No. 31 on Reader Service Card for more information

Don't Buy STEEL SHELVING until you get this catalog!



Read about the most original, practical and economical steel shelving on the market... the last word in new features, new simplicity and new value. It's a sensation! Don't buy any steel shelving until you get the facts on Borroughs. Send for catalog today! You'll be glad!

BORROUGHS MANUFACTURING COMPANY

A Subsidiary of American Metal Products Company of Detroit

3002 NORTH BURDICK **amp** KALAMAZOO, MICHIGAN

Circle No. 43 on Reader Service Card for more information

48

Highlights

of the month's news

ABOUT 20 months ago—in April, 1953, to be exact—we mentioned in this column that it was heartening to note the progress being made by the Caster & Floor Truck Manufacturers' Association with its equipment standardization program. We wished the Association good luck on a job that very much needed doing.

And now, it's even more heartening to report that Sinclair Weeks, Secretary of Commerce and chairman of the American Trade Association Executive awards committee, announced the Association has received the ATAE Award of Merit in recognition of outstanding achievement, made by members of the Association through their voluntary cooperation in the standards program.

This standards program was formally initiated in January, 1952, by the members of the Association to develop a set of standards for the manual material handling equipment they represented. The manufacturers realized they were producing hundreds of varieties of casters, wheels and floor trucks, where relatively few varieties would be sufficient for all needs. They recognized that progress would depend upon eliminating such artificial individualization when it only meant higher costs and constant confusion to the public.

Doing the "Impossible"

However, the results of developed standards do not show up overnight. But, CFTMA members worked hard to accomplish a project which some said was impossible. Even this, the development of specific standards, is only the first step in a long program of promulgation and promotion which will, in time, effect the adoption of these standards throughout the industry.

At this time, the Association has completed proposals for standards for all but one of its industry's products. Two wheel hand truck standards have now been formally adopted, and by the end of this month, Association standards will be completed for every product represented, and work will be well underway with the Commodity Standards Division in developing these standards into U. S. Commercial Standards.

Work with agencies of the Federal Government has included a review of certain specifications whereby CFTMA has been able to perform a useful, money-saving service, as well as to effect government specifications more closely related to the thinking of the industry.

And so, it's a pleasure to change our "good luck" of 20 months ago to "congratulations on a job well done".

FLOW

NEW DIESEL LOADERS STAR POWERFLOW STEERING, PARALLEL-BUCKET CONTROL

Latest developments to increase capacity and reduce costs are available on MM Wheelers—the original industrial “work-type” loaders.

Owners that choose or require diesel power now obtain the benefit of UTIL-D utility in new diesel units. MM energy-cell controlled combustion results in prolonged cylinder pressure for lowest maintenance and steady torque that matches job demands.

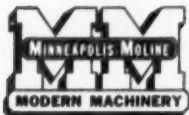
Powerflow hydraulic booster is the MM answer to difficult steering conditions . . . it's an industrial type unit that increases oper-

ator efficiency . . . has control valve built into drag link for added safety.

To promote more effective loading action MM loaders have parallel bucket control. This maintains proper bucket angle for improved loading and prevention of spillage at all heights.

In addition to the many superior heavy-duty advantages new MM integrated weight-to-power balance improves traction.

Extra large safety factor of MM design prevents being short-changed on tough job performance.



MINNEAPOLIS-MOLINE
MINNEAPOLIS 1, MINNESOTA

RTI-Wheeled Backhoe unit combines industrial prime mover with supreme speed and accuracy of hydraulic control and rugged construction for tough job conditions.



This RTI-50 Wheeler has new integral rear-end weight balance for bigger loading capacity. Short turning radius, ease of handling, large traction and flotation provide high mobility . . . fast work in close quarters.



A UTIL-175 loader is highly favored for big load capacity as the 1 1/2 yard bucket is located over large front drive wheels. Rears are regular 10.00-20 transport tires.



High lift, long reach, and plenty of low-cost diesel power make this Model UTIL-100 Wheeler Loader unit a top performer. 6 speed shuttle gear makes short work of loading trucks.

Circle No. 150 on Reader Service Card for more information

LITERATURE

FEATURED IN THIS MONTH'S ADVERTISEMENTS

Lifts, Turns, Stacks: An Up-ending Roll Clamp manufactured by Towmotor Corporation which lifts, turns and high-stacks rolls mechanically, is said to cut handling time and costs up to 80 percent. This company says you should Towmotorize your handling problems with its job-planned fork lift trucks.

Circle 197 on Reader Service Card

One Word: Storage areas go "on wheels" and supply keeps pace with production when you speak into General Electric's 2-way mobile radio. Booklet tells how 2-way radio efficiently organizes plant production.

Circle 94 on Reader Service Card

Changing Charging Plugs: Gould-National Batteries, Inc. gives money saving tip #3 which tells how to change charging plugs in your own shop. Details on its Plus-Performance Plan are offered.

Circle 100 on Reader Service Card

Get a Lift: No hand switches are required for the Load-O-Matic and Ramp-O-Matic docks and ramps manufactured by Field Engineering Products Co. Find out how this Hydroilic line of equipment can give your company a lift.

Circle 85 on Reader Service Card

Smooth Operation: Using the right equipment for each material handling job in your plant can contribute much to efficient, productive operation. Fibre Specialty Equipment is said to help save time and assure safe product handling. Catalog 54 gives details.

Circle 1 on Reader Service Card

Which V-Belt? If the correct size of endless V-Belt is not readily available, or if you have to tear down machinery to install, Flexible Steel Lacing Company tells which belt is the best for you.

Circle 86 on Reader Service Card

Clamping Down: A booklet which explains Elpar special engineering service in detail is offered by The Elwell-Parker Electric Company. It tells how to clamp down on handling costs.

Circle 72 on Reader Service Card

A Dividend: Efficiency is a dividend, says The Chas. Wm. Doepke Mfg. Co., Inc. The firm tells you how to get new savings in small parts handling with Nestier boxes.

Circle 77 on Reader Service Card

One Pickup: Dillon portable crane scales combine weighing and load movement in one operation; cut handling time over 50 percent, according to W. C. Dillon & Co., Inc. New booklet gives helpful price and weighing information.

Circle 73 on Reader Service Card

Considering Automation? Diamond roller chains have a place in the picture, if you're considering automation, says Diamond Chain Company, Inc.

Circle 74 on Reader Service Card

Precision Handling: When close, careful handling is required, Detroit Hoist and Machine Company's 2 speed hoist is said to be especially suited.

Circle 71 on Reader Service Card

Four-Way Movement: Wm. Christensen Co., Inc. features the four-way movement of its hydraulic loading ramps, which have capacities up to 20,000 pounds and finger-tip control.

Circle 49 on Reader Service Card

Non-Spill Handling: For the product or operation that demands gentle, sanitary, non-spill handling, Counsel Machine Company Inc. offers its Robo-Lift bucket elevating conveyors.

Circle 59 on Reader Service Card

World's Best Laboratory: Specifications are helpful guides in choosing the right hoist for the job, but the world's best laboratory for testing hoists is your own plant, says Coffing Hoist Company.

Circle 54 on Reader Service Card

Just One Lever: Loads up to 4000 pounds can be moved through your plant by Colson Corporation's Handler, which shifts, lifts and brakes through use of just one lever.

Circle 56 on Reader Service Card

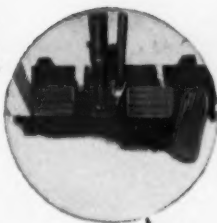
Move More: How to move more with a Michigan power crane is explained by Clark Equipment Company in its booklet "More Yardage Through Air Power", which may be obtained for the asking.

Circle 52 on Reader Service Card

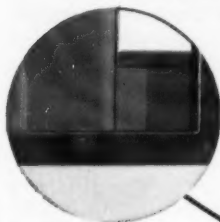
Cut Shipping Costs: Behr-Manning says you should strap your product with Behr-cat tape and cut shipping costs. The tape sticks without wetting.

Circle 33 on Reader Service Card

FAMILIAR CONTROLS
eliminate confusing one
for another, increase safety.

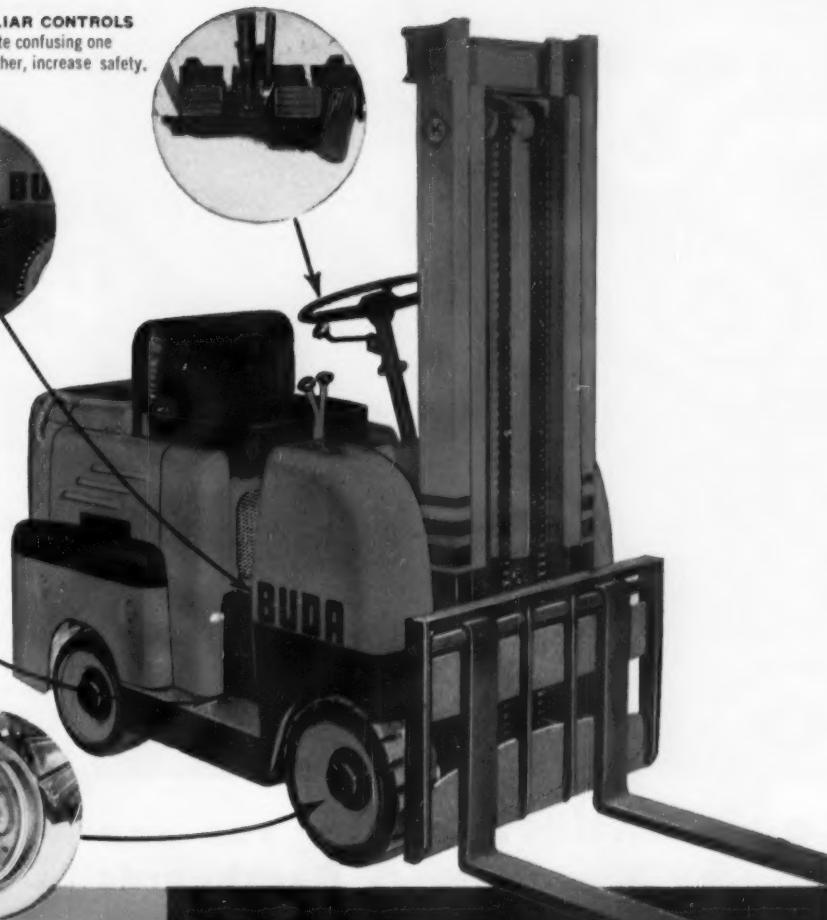
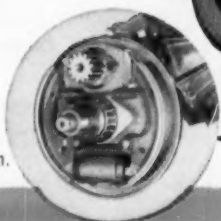


CLEAR FLOORBOARD SPACE
prevents tripping, aids
fast exit when needed.



WIDE LOW STEP
enables operator to get
off quickly from either side.

POSITIVE BRAKES
self energizing in both
forward or reverse direction.



BUDA

**FORK LIFT TRUCK IS
THE SAFEST IN THE WORLD!**



FREE FACTS BOOK

36 pages of the most interesting fork
lift truck data you have ever read! Fully
illustrated, this book belongs on the
desk of every materials handling man.
Write today for your free copy!

Your first step into a Buda shows you a built-in safety feature—the step is wide, low, built for fast exits in emergency! Sit in the wide seat. Look around. You have 360° clear vision! Look at the floorboard. No pedals jutting out to get in your way. Look at the controls—you have seen similar ones in your car—no chance to get them confused. Start up the Buda, whirl it—perfect stability with or without a load! Look at the slanted counterweights for safely ascending and descending steep ramps, the fuel tank set away from the engine, fingertip parking brake, literally hundreds of features that spell out safety. Yes, cut down accidents while speeding up production and do it with the Buda Fork Lift Truck, the *safest* in the world!

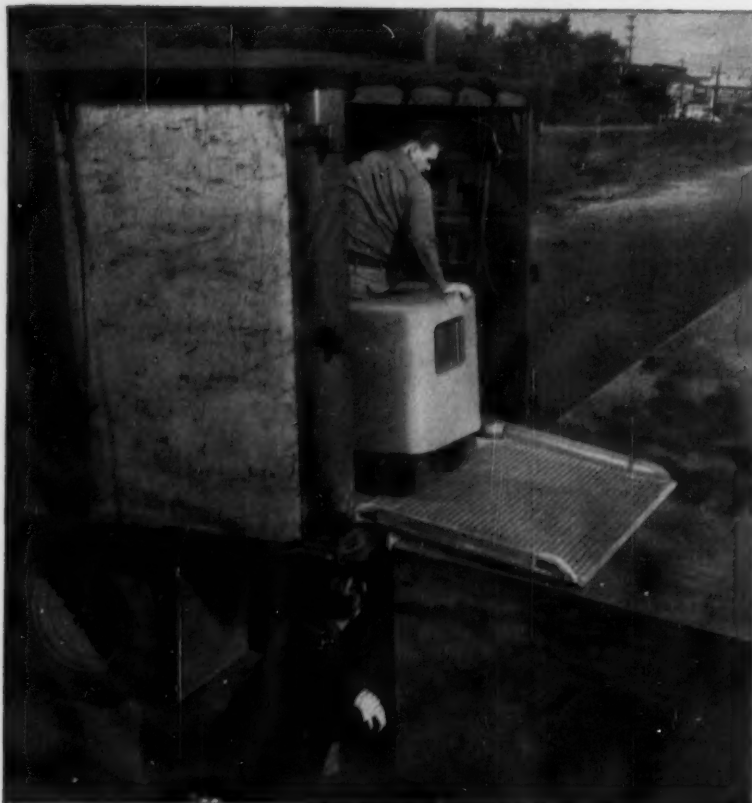
BUDA

THE BUDA COMPANY, Harvey, Illinois



Division of Allis-Chalmers Manufacturing Company

Circle No. 40 on Reader Service Card for more information



Look underneath — you can see why Magcoa truck Dockboards perform better . . . last longer!

Here's another Magcoa feature that insures better performance and longer Dockboard life on your truck dock: the Magcoa $7\frac{1}{2}$ -inch safety angle. It fits snug and secure in the narrow gap which results when you back into the dock and set your brakes. No need to move truck or trailer a second time to get a slip-proof fit.

And, regardless of rough duty and abuse the Magcoa safety angle holds up; doesn't crush, doesn't break. Spindly channel sections and other fragile locking devices can't take this kind of rough treatment.

The Magcoa $7\frac{1}{2}$ -inch safety angle is dramatic visible evidence of why Magcoa truck Dockboards perform better, last longer.

The whole story is told in a new bulletin, "Look Into And Under Magcoa Dockboards." Use the handy coupon to get your free copy.

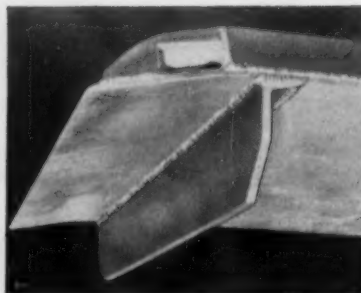
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LOOK UNDERNEATH!

The terrific thrust of backing semi-trailers and high speed lift trucks doesn't bother this rugged $\frac{3}{4}$ " x $7\frac{1}{2}$ " Magcoa safety angle. Notice that it extends the full width of the Dockboard and is welded on all four sides—in this case, 124 inches of continuous precision welding.

For your free copy of "Look Into And Under Magcoa Dockboards" . . . clip this coupon to your business letterhead, print your name clearly, and mail today to Magnesium Company of America, Materials Handling Division, East Chicago 1, Indiana.

AD LITERATURE

Continued

You Can't Kid The Moderns: That's what Brooks and Perkins Inc., magnesium fabricators, says in exploding the fallacy that weight means strength. A new folder on magnesium plate and sheet will be forwarded on request.

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Built-In Safety: Buda claims its fork lift truck is the safest in the world, and offers to send you a free facts book on the subject.

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Belting Guide: Buffalo Weaving & Belting Company offers a 14 page guide to buying the right conveyor belt for your particular job, and says its belts are tougher, longer lasting.

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Greater Profit: A case history of case-handling in a Cincinnati brewery is detailed by E. W. Buschman Company. The company handled 13,200 cases an hour for greater profit.

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Too Hot To Handle? Bay City says its shovels and cranes handle hot materials with the same dependability, speed and precision that is typical of their performance on any job.

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Present and Future: The flexibility of design incorporated in every Marietta Concrete Corp. storage system, easily provides for increased handling capacity for future expansion, in addition to allowing you to enjoy lower operating costs today, says this manufacturer.

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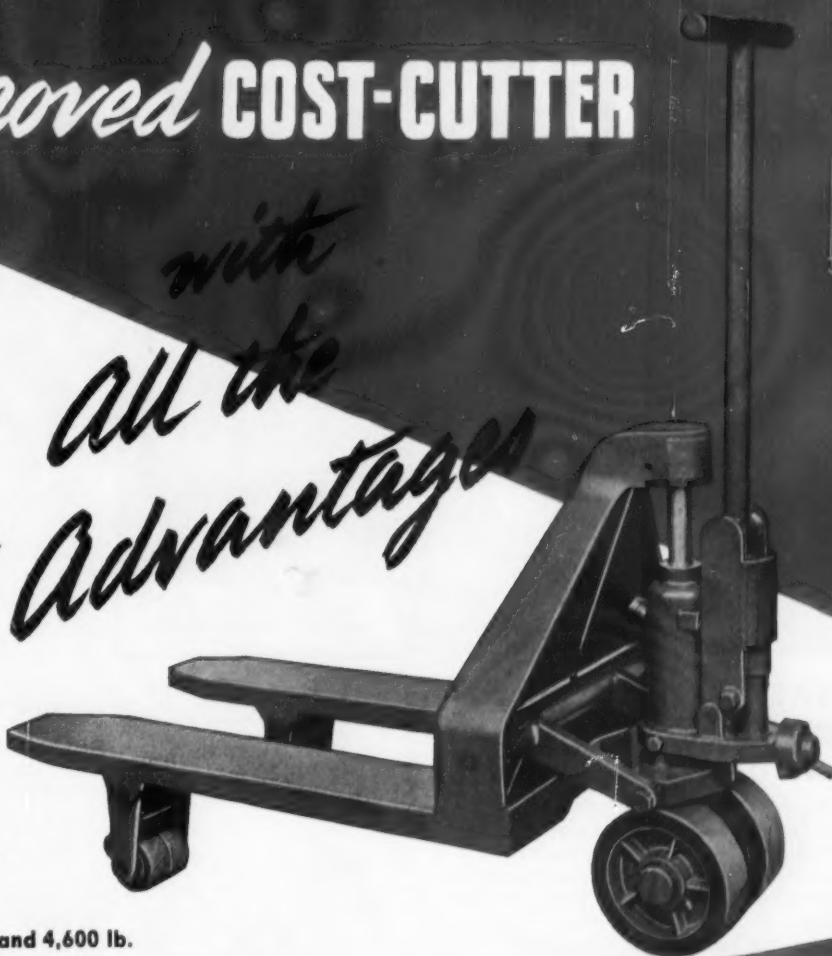
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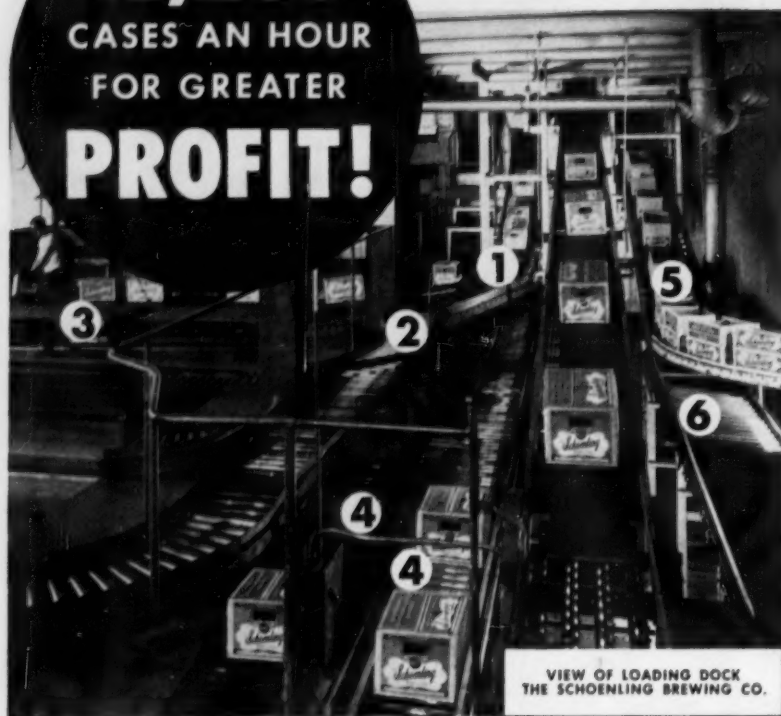
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- 1 Powered belts bring filled cases from bottling and storage for loading trucks. Rate of flow is controlled at each truck bay.
- 2 Movable curved deflector guides cases onto proper truck spur.
- 3 Counterbalanced spur in raised position to receive filled cases for loading truck. In lowered position, spur carries cases of "empties" from truck to live roller lines (4) which lead to storage and bottle washer. Six trucks can be loaded and unloaded simultaneously.
- 4 Two live roller lines carry "empties" to storage and bottle washer.
- 5 Powered belt carries cases of new cans to third floor storage.
- 6 Live roller section feeds belt to third floor.

All conveyor lines in the Schoenling plant are interconnected and reversible so that cases can be conveyed between any two locations.

AD LITERATURE

Continued

catalog gives details on ordinary loads, heavy loads or bulky loads being moved smoothly, efficiently, safely in any direction.

Circle 2 on Reader Service Card

Eliminates Load-Lift: A trailer which allows you to wheel your load straight onto it at floor level, thus eliminating lighting your load, is described by Omic Ltd.

Circle 165 on Reader Service Card

Store and Ship: Paltier Corporation describes its folding Pyramid box which allows you to store and ship in the same container. 16 page catalog gives further details.

Circle 168 on Reader Service Card

Trickle or Torrent: A versatile bulk feeding machine designed for all materials at a rate from a trickle to a torrent is detailed by Richardson Scale Company.

Circle 178 on Reader Service Card

Portable Dock: A dock on wheels which folds up compactly for storage and which may be used indoors or outdoors is featured by Raymond Corporation.

Circle 175 on Reader Service Card

Substitute For An Elephant: Bulky, awkward, heavy loads can be handled easily, safely, quickly and for less with a Ruger crane, says this manufacturer.

Circle 181 on Reader Service Card

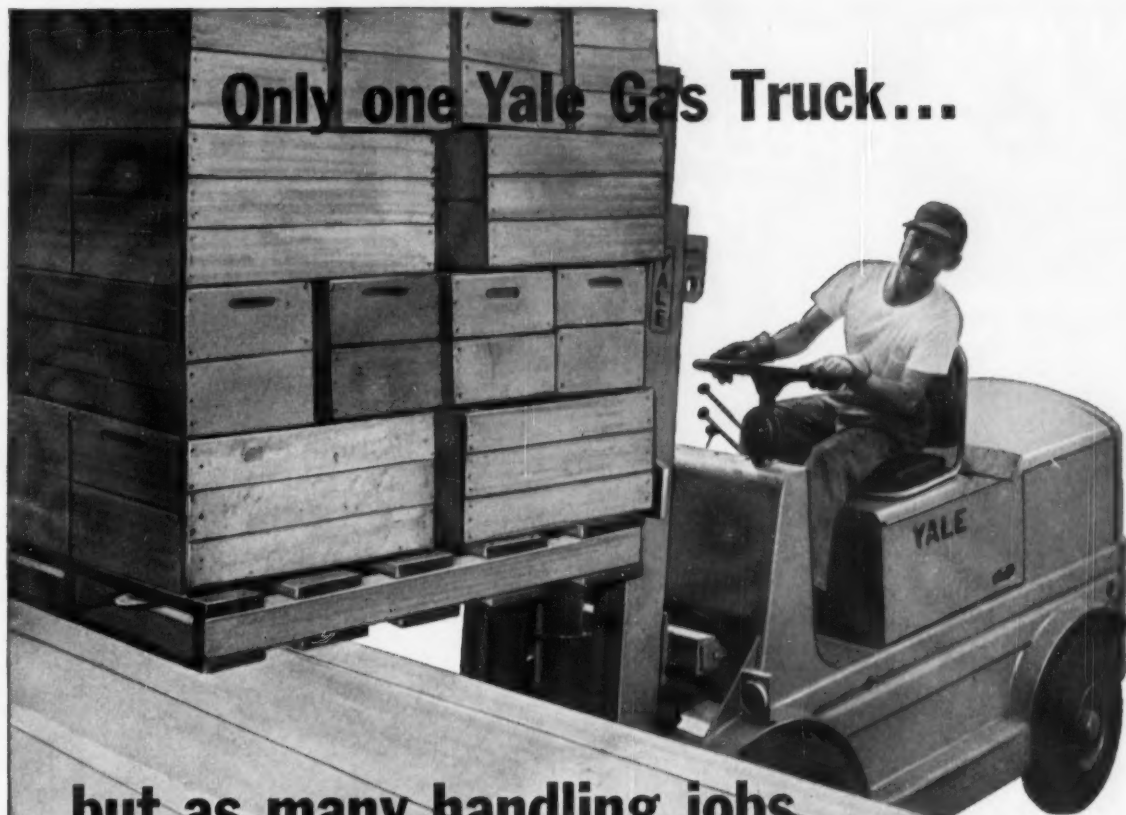
Tough But Tender: The only padded strapping for protective packing of appliances and other finished metal and wood products is said by Sackner Products to be its Cush-On-Strap.

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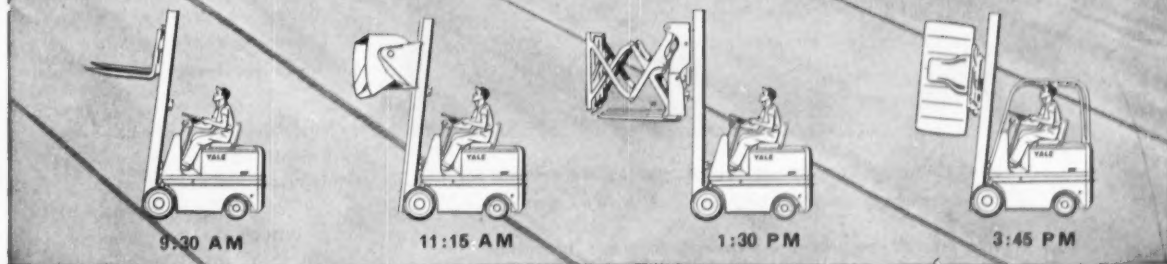
Forward-End Dumping: A balanced barrow for forward-end dumping is described by

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DECEMBER, 1954

55

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AD LITERATURE

Continued

Sterling Wheelbarrow Company. This company's wheelbarrow has a reinforced tubular steel frame with special steel nose shoe.

Circle 189 on Reader Service Card

Air-Cooled: Proof that most OEM designers and equipment builders specify Wisconsin heavy-duty air-cooled engines is offered by this manufacturer.

Circle 210 on Reader Service Card

Proof: "Owners Report", a booklet of case histories of money-saving conveyor installations, is offered by A. B. Farquhar.

Circle 84 on Reader Service Card

Pick Up Production: A worm drive hoist that will give your production a big lift is described by Electrolift, Inc. Models in sizes up to six tons are available.

Circle 76 on Reader Service Card

Swivel And Roll: Darnell casters and wheels always swivel and roll, says this manufacturer, which offers a type and size for every purpose.

Circle 69 on Reader Service Card

Reliable: General Electric Company says its metallic rectifier chargers are reliable units which will help keep your battery trucks at top efficiency. Features pointed out are ease of operation, little maintenance and complete flexibility.

Circle 93 on Reader Service Card

Gasoline or Diesel? Hercules Motors Corporation offers the assistance of its engineers in the proper selection of the most economical type of engine for your particular equipment.

Circle 105 on Reader Service Card

Fast-Working: The Jaeger 12 cubic foot Auto-Scoop packs more "muscle", moves heavier

Throw away your grease gun!



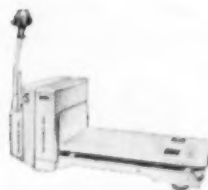
These Lewis-Shepard Electrics are "lubricated-for-life" . . . never need greasing!



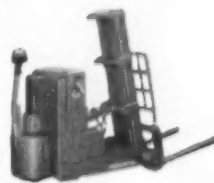
SpaceMaster Model "E"



SpaceMaster Model "J"



Platform JackLift Electric



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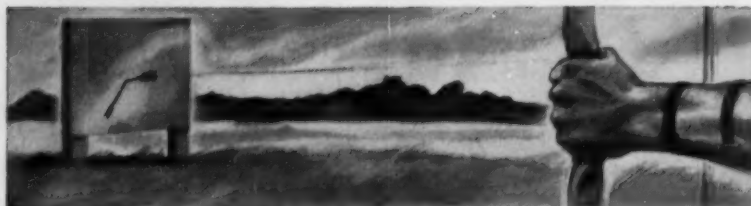
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- ☐ New SpaceMaster Model "J" Catalog 33
- ☐ New Platform JackLift Electric Catalog 34
- ☐ New Master JackStacker Catalog 34

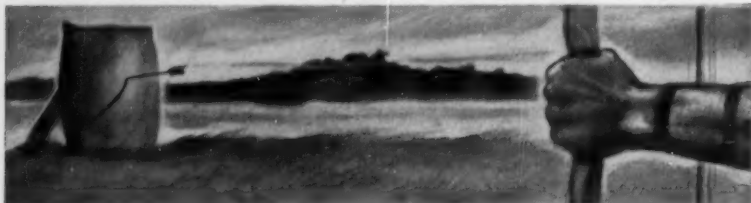
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From a high speed bow, launch a steel pointed arrow into a piece of sheet metal. You'll find that the rigid resistance of the metal can't stand up against the impact of the arrow.



However, try the same trick and fire away at a bag full of cotton and you'll find that the arrow is stopped cold by the lack of resistance. This same lack of resistance to impact makes solid woven cotton Buffalo Belts last longer.

...and you'll always buy **TOUGHER, LONGER LASTING** **BUFFALO Conveyor BELTS**



MADE OF SOLID-WOVEN COTTON with our exclusive Wov-In-Wear process, Buffalo Belts are the conveyor belts with the "built-in bounce" Strange as it may seem, these belts **LAST LONGER** because like the bag of cotton they offer little or no resistance to the impacts and wear factors that are peculiar to your particular production line. Hard, stiff, rigid belts will grind, groan and wear if your conveyor is the least bit bumpy or out of line. Buffalo Cotton Belts, just because they are *woven*, **ALIGN** themselves perfectly to every curve of your conveyor. But . . . by the same token, the *extra tight weave* of the strongest cotton yarn available in Buffalo Belts makes them the **TOUGHEST** belt you can buy.

IN ADDITION TO REGULAR WOVEN BELT, BUFFALO OFFERS 6 SPECIAL TREATMENTS TO HANDLE PARTICULAR PROBLEMS, FOR INSTANCE:



Buffalo's regular cotton belt is covered with a tough plastic overcoat to produce **PLASTEX**. This surface won't crack or peel and is impervious to hot grease, oils, acids, alkalies, moisture and temperatures from -20° to 200°F . Won't absorb or exude any odors and can be cleaned by **ANY** method including live steam.

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AD LITERATURE

Continued

loads, according to this manufacturer, which offers comparative data on the subject.

Circle 119 on Reader Service Card

Do It Better: Find out how to do the job better with Loudon engineered monorail. Booklet entitled "Economical Material Handling" gives time-saving, cost cutting ideas.

Circle 129 on Reader Service Card

Save Manpower: Let Magnesium Products of Milwaukee tell you how to save manpower, speed loading, reduce costs with its dockboards designed for truck or rail.

Circle 138 on Reader Service Card

Personnel Carriers: The story of how Douglas personnel used to walk 7 or 8 miles daily, and now cover more ground, make more pickups, carry heavier loads at one-fifth cent per ton mile is told by Autoette, Inc.

Circle 24 on Reader Service Card

Quality Assured: You can be sure of the quality of your pallets if they are marked with the NWPMA brand, according to Arkansas Pallet Co.

Circle 19 on Reader Service Card

Free Layout Service: Trained Equipto engineers would like to lay out your storage facilities, suggest the number and types of units you will need, and increase your working efficiency at no obligation. Further details available.

Circle 22 on Reader Service Card

Better Three Ways: Design refinements that make the HD-5G tractor shovel of Allis-Chalmers a three-way better value than ever before are detailed. Also listed are ten quick-change attachments, said to add to the unit's versatility.

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YOU CONSIDERING AUTOMATION?

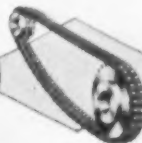
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TRACTOR SHOVELS
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in one food processor's plants*



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MILLIONS OF TONS of bulk materials are handled *daily* by "PAYLOADER" tractor-shovels in all kinds of industries. Sand, clay, coal, chips, chemicals, fertilizers, earth — all manner of materials are scooped up, carried, loaded, dumped, spread, unloaded and piled by these versatile, efficient machines.

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If you have bulk material handling problems, it will pay for you to find out how "PAYLOADER" tractor-shovels can help you too. There's a size and type to fit *your* need — eight models with capacities from 12 cu. ft. to 2 cu. yd. Your "PAYLOADER" Distributor is ready to give you full facts. The Frank G. Hough Co., 731 Sunnyside Ave., Libertyville, Illinois.

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WORKING AT LUNCH, panelists and committeemen discuss questions submitted by conferees during morning session. From left to right are James E. Borendame (MHI), M. L. Hurni, F. E. Cummings, C. H. Strauss (MHI, Chairman), R. C. Waehner, J. C. Emery, and T. H. Nelson.

Integration of Transportation in Continuous Flow Systems

Executives consider the place of both internal and external movement in the development of systems for mechanized handling from supplier-to-plant-to-consumer.

IN THE SECOND program of material handling subjects especially prepared for management people—and conceived and quarter-backed by the Material Handling Institute—the “Working Conference on New Concepts of the Economics of Integrating Material Handling and Transportation” was held October 20 in the Drake Hotel, Chicago. The day-long event was jointly sponsored by the MHI, the Chicago Association of Commerce & Industry, and the Chicago Traffic Club.

Approximately 175 business executives attended to hear their counterparts—who have special talents or experience in material handling and traffic—discuss the latest developments in mechanized handling as they effect and are effected by transportation problems. One common denominator of all talks and discussions was the premise that a fully successful, continuous flow system today must include provisions for all aspects of internal and external material movements.

The program followed the procedure established a year ago in Detroit, with the morning devoted to lectures. At noon, speakers lunched together in a private

room, in order to mull over questions which conferees submitted after each talk. The afternoon session was devoted to discussions of these questions by both panel members and conferees.

Panelists were: M. L. Hurni, Senior Consultant, Operations Research Consulting Service, General Electric Company; Frank E. Cummings, Principal, Drake, Startzman, Sheahan & Barclay; R. C. Waehner, General Manager, Distribution Division, Lever Brothers Company; and J. C. Emery, President, Emery Air Freight Corp.—all of New York City.

Chairman of the MHI Industry Service Committee, the group which conducted the survey to determine the Conference subject, was Charles H. Strauss, President, Ironbound Box & Lumber Co., Hillside, N. J.

The luncheon speaker was W. F. Rockwell, Jr., President, Rockwell Manufacturing Company, Pittsburgh, Pa. Mr. Rockwell was introduced by the President of the Material Handling Institute, C. B. Ellidge, General Electric Company, Schenectady, N. Y.

The panel leader was Thomas H. Nelson, partner

(More on next page)



● The greatest single influence on material handling is likely to be the renaissance of "integration." The "integrated" man is but a few steps from the "integrated" management — and the "integrated" plant.

W. F. Rockwell, Jr.
Rockwell Mfg.
Company

● Individuals responsible for external transport must be guided by more tools and ideas than those which are provided by the route book and schedule of tariffs. External problems require the same logic as internal problems.



M. L. Hurni
General Electric
Company

of Rogers, Slade & Hill and President of Executive Training, Inc. Short talks and welcomes were delivered by T. H. Coulter, Chief Executive Officer of the Chicago Ass'n. of Commerce & Industry; and A. H. Schwieter, representing the Traffic Club of Chicago.

Highlights and abstracts of the talks given in the morning session follow:

M. L. Hurni: "New Approaches to the Material Distribution Problem."

There is a growing recognition that the entire manufacturing process is somehow integrated—that what may be done outside the factory premises may have an important bearing on the structure of the shop itself as well as on the manner in which the processes are conducted.

What is most impressive about the handling of materials inside the factory is the hardware—the conveyor line; the transfer mechanism, coupling sequences of machines into a single work station; the conversion of batch plants into continuous process.

By contrast, the case of external transport seems characterized by an overburdening variety that makes similar treatment impossible. This variety ranges from the situation of the job lot manufacturer to that of the mass producer, the company with local markets to that having wide geographical dispersal. There is a range of unit values of product and product size to consider as well. Another equally long list of variations that effect or are effected by the marketing situation includes such matters as customer shipping requirements as they effect lot sizes and frequency, warehousing and method of shipment, and overall cost of shipment.

These problems are no more varied and complex than those inside the shop. They should be examined as logically and as objectively as the internal problems. Some of these internal transport problems have had a marked effect upon marketing policy and product design, but these things are not apparent to the casual observer in the final result.

This should not be interpreted to mean that present methods are not, in many instances, the best possible—not any more than it should mean that the shop as it

now stands and is organized represents the maximum overall economy to which external transport must adapt and conform to maintain this maximum. The reverse may be the case.

It does mean that the individuals responsible for external transport must be guided by more tools and ideas than those which are provided by the route book and schedules of tariffs.

The solution to this problem of integration may lie in many methods of attack. But one that has proven successful is: first, systematically examine the requirements of the environment in which the business is situated; and, second, come to an understanding of resources available to that business and develop logical hypotheses of how resources can be best organized to meet requirements.

On the surface this does not sound like very much, but, actually, if pursued diligently, this method has subtle depths. Let us examine a few of the differences from conventional methods of analysis:

1. As a matter of necessity the whole business and its requirements, or an autonomous part, should be examined, not just a piece—as, for example, the stockroom, or inventory control, or shipping.
2. It presumes that measurements will be made by the most rational tools available, that time will be spent on the investigation, and that the results will be understandable to all concerned. The investigation is not based upon opinion. If the relationships are subtle, there will be no hesitation to use, let us say, mathematical methods to distill out and outline the relationships.
3. It denies the isolated event or activity requiring the instinct of particularly gifted people alone to understand and make decision. It looks behind the individual event or activity for its relationship with others. This may be either a physical relationship—as between parts making and assembly—or a relationship in time—as, for example, the patterns in orders when examined in the aggregate for pre-established periods of time.
4. It also presumes that there is no absolute answer, that any alternative way of meeting the re-

● If the extension of the assembly line flow back to original material sources is a sound principle, controlled transportation is the key. And air freight with speed far surpassing that of any other carrier, is the adjustment factor.

J. C. Emery
Emery Air Freight Corp.



quirements of the business environment will be a balance among risks and costs.

A traffic manager, for example, may become increasingly curious about shipping requirements in respect to:

- a. The frequency and composition of shipments to particular destinations.
- b. The size of shipments.
- c. The relation of these elements to actual orders on hand.
- d. The relation, for particular products, of manufacturing schedules to shipping schedules.
- e. Availability of stocks both at the factory and in local distributing points on the frequency, composition and size of shipments.
- f. Relative costs of shipping that would result from utilizing this information into ideal shipping routines.

He would quickly be involved on a sound factual basis with (1) the manager of the manufacturing facility in respect to the interrelation of schedules and (2) the marketing manager on stocks, shipping commitments, etc.

There would be involved, as a result, investigation of the balancing of transport costs against other costs and an effort to determine overall economies, not economics in isolated elements alone.

This does not necessarily mean that, in many cases, the isolated approach will not still represent the best results that can be attained at a given time. It does mean that a serious look will be taken at the entire process and for modification that can be made across the whole for the benefit of the whole.

In effect, integration will have been obtained at the intellectual level, if not at the mechanical level. The intellectual integration is the most important as it must come before any mechanical integration if possible. It should also be noted in passing that voluntary integration at the mechanical or physical level is best obtained by making this intellectual integration first—it brings understanding.

The job for transport people is to see that external transport receives fair consideration in these problems. If external transport looms insignificantly in any combination, well and good; adapt to the system that re-

● Impact of handling methods on transportation has been tremendous. Unit cost of transportation cannot be considered without cost of handling required to use the carrier and effect of the carrier on unloading costs.

R. C. Waehner
Lever Brothers Company



● We recommend that a Director of Physical Distribution be established in the upper echelons of the organization—with complete authority to plan, schedule and control all distribution activities—external and internal.

Frank E. Cummings
Drake, Starzman, Sheahan & Barclay



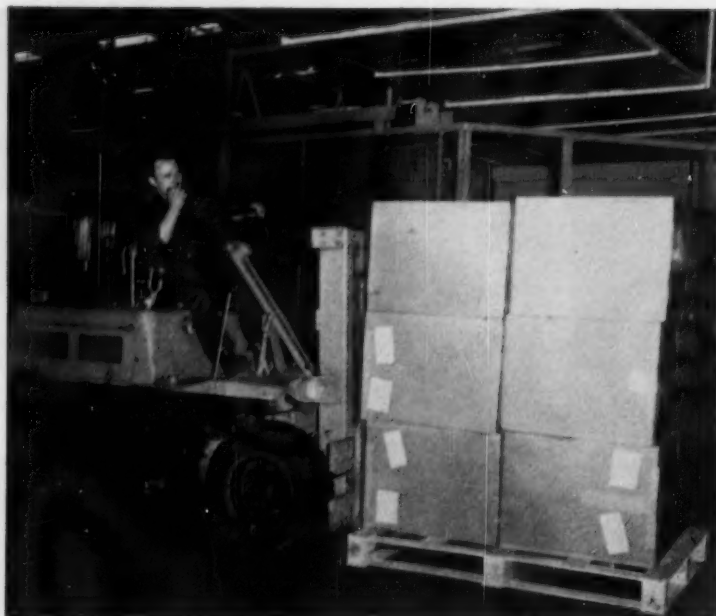
sults in maximum overall good. If external transport looms large, then how it is done should be a factor.

A question in most any transport problem is the frequency and magnitude of demand. It is present in every internal transport problem as well as external. It is often obscured in the internal problem for the reason that the demand is already known or can be controlled to a sufficient degree to warrant the adoption of special transport means.

In the external case, knowledge of frequency and magnitude of demand are usually not easily controllable or easily known. As a consequence, one source of bedrock information for designing specialized means of transport is missing. In some businesses this kind of data may extend beyond the problem of design of facilities and form the basis for the more fundamental chores of formulating both production and shipping schedules.

Of course, the most obvious use of such data is in the development of the need for and the size of geographically disbursed warehouse stocks. All too frequently, such stocks are viewed as being within the sole province of marketing and for the single objective of obtaining sales, with the limiting factor financing alone. They also have obvious impact upon the nature and the economy of transport. The point at which transport changes from a secondary to a primary consideration must be determined for each particular

(Continued on page 86)



COORDINATION among drivers prevents shortages. At Mid-western plant truck operators receive radio licenses, which are not required but do build morale.

Latest Techniques

Questions most frequently asked about industrial communications are candidly answered by Neal Harmon, Communication Equipment Dept., General Electric Co. He has participated in the development of this new handling tool since it was conceived.

WHO can use industrial radio economically—how many trucks have to be radio-equipped to produce savings? What, according to experience of sufficient length, are the monetary economies that can be expected? How do you get a license for a two-way system? How much is radio likely to cost?

These, and questions like them, are raised whenever industrial radio is discussed. Until recently, experience was rather limited and figures were inclined to be speculative. Now, though, we have had radio doing a good job for many types and sizes of firms for a sufficient length of time to evaluate it objectively.

Let's first settle a few points that have been debated.

Any material handling activity can be licensed to use two-way radio. Installations may cover one or a hundred or more vehicles.

Increased efficiencies and savings gained from use of radio are reported to range as high as 75 percent; a mean of close to 33 percent, across industries, is highly probable. The greatest single gain usually results from the drastic shortening of time required to move material between manufacturing processes. The

next major effect achieved through radio is constant coordination among vehicles.

The number of vehicles in a material handling operation is not the primary factor to be considered in relation to gains which might be expected from radio installations. The nature of the industry and the geographical pattern of the material handling operation are of greater importance.

Numerous plants with but one or two vehicles have reported that substantial savings in material handling costs resulted from radio.

A number of currently large industrial radio systems were justified upon the basis of pilot installations which originally involved but one or two vehicles. In other words, studies of the activity of these limited systems revealed improvements in efficiency and economy which led to the installation of radio on most or all of a company's trucks.

Colonel W. H. Dawson, Jr., commander of the Augusta, Georgia, arsenal, estimates that two-way radio on his 11 material handling vehicles will save \$20,000 during its first year of operation.

"POOL SYSTEM", with central dispatching, has produced greatest economies because dispatcher assigns handling vehicles on basis of job priorities.



In Radio Applications

A large motor car manufacturing firm reports that savings resulting from radio control paid for the installation in less than one week. Radio made it possible to shift eight men from material handling (an overhead expense) to production at the end of the first week.

When the Electric Storage Battery Company (Exide) in Philadelphia was planning an expansion of facilities, radio control of material handling was included in original plans. In fact, one official was quoted as saying that the entire expansion program was designed around radio control.

Radio Favors Continuous Flow

An advantage of industrial radio that has not elsewhere been sufficiently noted is the way in which it helps provide an even flow of materials through a plant. It assures adequate supply at all points in a production line. It prevents the accumulation of excesses at any station, eliminating the dangers of slow-downs and shortages.

Expensive machine tools may be kept running at maximum capacity through radio control of material handling vehicles. In one plant it was found that costly milling machines were operating at about 35 percent of capacity because raw materials were not kept coming at a constant, maximum capacity rate. A study revealed the firm had adequate stores in the yard. Delivery to machines was difficult to regulate because of poor contact with trucks. Installation of

radio at a cost of \$3000 increased the useful operating rate of milling machines to 80 percent.

A large Midwestern appliance manufacturer credits a 15 percent savings on over-all material handling costs to a new radio system. Much of this has come because operators do not have cause to leave their vehicles as often as before.

This was one of the companies which installed three sets as a trial. It quickly found that, in running the trucks from fabricating to assembly areas, radio made it possible to reduce the number of trucks to two and release two operators. Another part-time truck formerly used was no longer required. The company found, too, that radio so increased the speed of collections at assembly stations for trackless trains that a fork truck could be released from this operation. This is, of course, another example of improvement in the supply and delivery system that can be produced through better communications.

Distances traveled by vehicles may or may not be a critical factor in the use of radio. In general, the greater the distances traveled, the greater the savings achieved through the elimination of deadhead times. Once again, though, just as soon as a truck is out of sight—regardless of actual distance—its availability is severely curtailed without adequate communications. Even when trucks operate within restricted areas, especially around noisy machines, effectiveness is greatly increased through radio. Super-

(More on next page)

visors and drivers can provide more help around machines, shift vehicles readily from department to department—in general coordinate activities among themselves far better through radio than they could through foot messengers and shouted instructions.

Central Dispatching for Maximum Utility

It is through the "pool" system, however, that the greatest economies have been found. When all requests for the services of vehicles are made to a dispatcher, they can be assigned on the basis of priorities of jobs to be done.

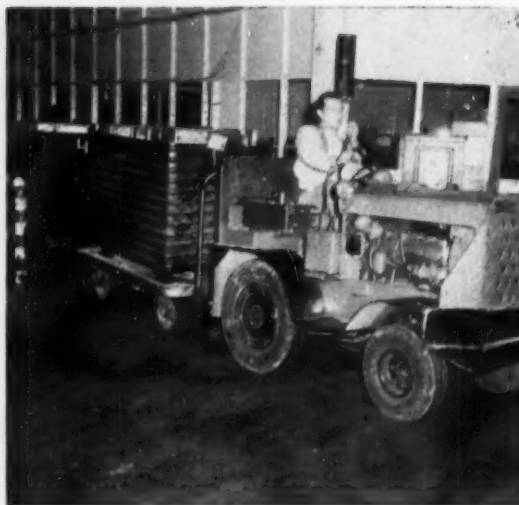
In most plants, needs for vehicles vary from hour to hour in the various departments or sections.

When one department—say, the receiving department—has urgent need for more vehicles than are regularly assigned to it, they can be dispatched immediately.

An unusually large amount of material might be arriving. Another department may have vehicles which can be temporarily released from routine jobs—it might even have an idle truck. In any event, additional help can be provided almost instantly to alleviate pressure without jeopardizing over-all operational efficiency.

Numerous other benefits are derived from industrial radio communications today. Among them are:

1. The prevention of shutdowns through emergency dispatching of component parts to production stations.
2. Assurance of minimum down-time by scheduling "set-up" crews or tool makers.



ACCUMULATION of loads for in-plant trains has been so speeded by radio in this firm that one full-time fork truck has been released from the operation.

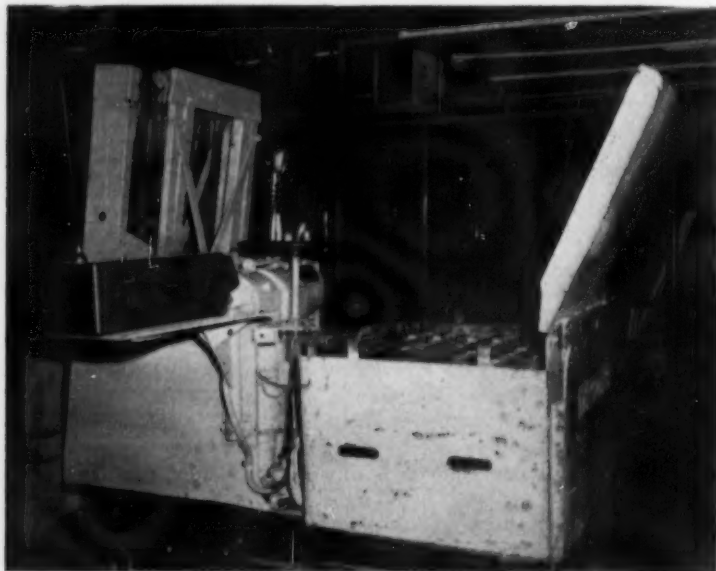
3. Assistance in accidents or fires.

One plant has placed large fire extinguishers on all of its radio-equipped fork trucks, which are sent to fires by the material handling dispatcher.

Two License Categories to Fit Plant Needs

Radio has been recognized as an industrial tool by the Federal Communications Commission which has established two classifications under which a license may be obtained: (1) *Special Industrial*; and (2) *Lower Power Industrial*.

A license to operate radio equipment may be



SWING-OUT bracket allows set to remain undisturbed while battery service takes place. When truck's not occupied, sets are locked against unauthorized use.



INTER-PLANT transportation, with radio, operates without dead-heading, relieves shipping departments of confusion, since pick-up times are accurately set.

granted in the Special Industrial classification to anyone who is engaged in "an industrial activity the primary function of which is devoted to production, construction, fabrication, manufacturing, or similar processes . . ."—as opposed to those firms engaged in a servicing or distribution function. There is no limit on the power of the transmitting equipment, nor the antenna height. There are certain limitations on the areas in which the equipment may be used, the chief one being the population of the area in which it is desired to operate the radio equipment.

The other classification, Low Power Industrial, was established to provide service for "anyone engaged

in commercial activity" who desires communication within the plant area. As the name implies, the power of the transmitter is limited—three watts output is the maximum allowed—and the distance between antenna and transmitter is restricted to 25 feet. For many industrial plants this power is sufficient to provide the communication service desired. There is no limit on the area in which a station licensed in the Low Power Industrial classification may operate.

Representatives of radio communication manufacturers will assist any firm in preparing applications for FCC licenses.

Equipment and Cost

The adaptation of two-way radio to material handling vehicles presents several problems: (1) The radio equipment must be sturdy; (2) Compactness is essential, for available space on vehicle is limited; (3) Equipment should operate from many voltages, including 6-volt dc, 12-volt dc, 32-volt dc, as well as 117-volt ac; and (4) Radio equipment should be weather resistant.

The cost of what might be considered an average system—consisting of ten trucks and one dispatching station—is approximately \$6,000. Units for the vehicles (fork trucks, tractors, straddle trucks, locomotives, etc.) cost about \$500 each, including power adapter for voltages other than 117-volt ac and for 6- or 12-volt dc. The dispatch stations, including antenna, average about \$1000 for the 50-watt and approximately twice as much for the 250-watt units. Maintenance is usually handled by service organizations on an annual contract. However, several of the larger users established their own service departments.

It is apparent that this newest tool—radio for industrial vehicles—is assuming a place in our industrial system. "A foreman on every truck" will become the accepted practice in the not-too-distant future.

CONSTANT SUPPLY is maintained at machines by radio-equipped trucks which can be called the instant shortage seems imminent, as in this press dept.





EXECUTIVES INSPECT OPERATIONS in plant. Vehicle stops at various points for on-the-spot discussions.

Personnel Carriers—

**Is Time-Consuming Walking
Cutting Down Your Profits?
Carriers Help Save That Time**



EMERGENCIES are met as promptly as they arise by this completely-equipped truck with a crew of five.

EVER since material handling began to receive the attention it really deserved, tremendous savings have been realized by the efficient movement of all types of materials into, through and out of plants. But what about the movement of men, or personnel? Time means money, and it's obvious that time consumed in unnecessarily slow movement represents dollars thrown away. Although numerous methods have been devised to handle materials better, relatively little thought has been given to transporting men responsible for the materials.

Several years ago an increasing number of material handling equipment manufacturers became aware of the need to transport men rapidly, and designed a truck for that specific purpose. At the time, the theory of single structure plants was becoming popular. While it was fine to have everything on one floor—it was rough on the supervisor keeping a close check on men, machines and goods. By the time he had walked to one end of the plant, he was needed at the other end, and in a hurry. The answer to this problem was a personnel carrier in which a supervisor could quickly drive about a large area, from one operation to another. And, better supervision resulted in better work.

Just how can a system to "speed people" be applied to a plant? Extensive investigation of the subject revealed that many companies have successfully speeded



VISITORS TOUR AUTOMOTIVE PLANT in comfort. Guide with hand mike explains manufacturing procedures.

Supervision Tool, Safety Aid

their employees' movements—to everyone's satisfaction.

During the war, for example, one large aircraft plant found that the 30-minute lunch period allowed for workers was not sufficient, since employees were constantly late returning from lunch. A thorough study proved the delay did not occur in the lunch room itself, but in walking to and from the cafeteria. Immediately, personnel carriers were employed to transport workers to and from lunch. As a result, production was speeded up, due to complete coordination of all departments. And, the company further benefitted because employee morale was boosted.

Servicing Time Cut

In a Southern textile mill, the changing of bobbins was a major problem. Walking through the mill to service machines which were sometimes widely separated was time consuming, as well as fatiguing. An electric truck manufacturer modified one of its units so that, instead of walking, the worker could ride from machine to machine. There was no longer any delay in changing bobbins, many more units could be serviced by one person, and personnel were freed to handle other jobs.

Not only can these rugged little trucks be used for routine jobs, but they're especially handy when an

emergency arises, and men and equipment have to be speeded to a particular area. A tool company in Houston, Texas, had a personnel carrier designed to meet its particular needs for a maintenance emergency truck. The truck carries tools and equipment, and a driver and four riders are seated on the unit. The savings in "down time" alone could have paid for the truck, to say nothing of the efficiency achieved in meeting emergencies as they arise.

Another example of an emergency vehicle is the one used as a small fire truck. This is truly a fire-fighting unit, and is equipped with everything needed in case of fire, including a ladder, blinking light and siren, and it carries a fire-fighting crew, too.

Naturally, plants don't constantly operate under the stress of fire, but the problem of an emergency in some form is ever present in almost every plant, and the larger the company, the greater the risk. Anticipation of and preparation for an emergency frequently means the difference between profit and loss.

Executives, for the most part, don't have time to walk through a plant. Yet, they often need to see for themselves what is happening in the production, storage, shipping departments. With a personnel carrier, they can ride through the plant, see plant operations first-hand, and discuss problems on the spot with

(More on next page)



VEHICLE, fully equipped, provides instant protection to plant, valuable machines and also personnel.

PROBLEMS are solved quickly by this firm as routine tours by key personnel help spot likely trouble (left).

PERSONNEL CARRIERS

Continued

department heads. Useless time is not wasted walking through large areas, the employees take pride in the fact the boss really knows and cares what is happening and subsequently take greater pride in their work. The all-around effect created is good, and besides, valuable time has been saved.

Plant tours are routine at many plants, especially in the automotive industry. But it isn't always easy to control large groups of people, or to keep them from diverting the attention of workers. Quite a number of car manufacturers today are using the tractor and

trailer system to tour people through the plant. Permanent type seats are installed on the trailers which hook onto the tractor by means of a coupling. Any number of persons can be guided through at one time in this manner, and the tours are quicker, the people can see more, and there's no danger of workers being disturbed by visitors.

Unfortunately, it was not possible to compile from any source consulted a dollars and cents savings resulting from the use of equipment to move people faster

(Continued on page 141)



PRODUCTION PROCEDURES are initiated by plant engineers, who confer and make notes while riding.

SUPERVISOR keeps constant control of plant operations with this small, versatile tractor-type unit (left).

Windrow Loader— Loose Bulk Handler



INCREASING numbers of applications are being found for a medium capacity windrow handling machine, recently developed, in material loading and turning operations.

One of the most timely uses is in the removal of snow from yards, drives and roads. In this job, the equipment handles seven cubic yards per minute. (For heavier materials, such as sand and aggregates, capacity is normally four cubic feet).

The equipment has been reported in use in a fertilizer field, where, during the curing stage of compost, material must be turned for aeration. Another turning application is in the production of tan bark.

In loading jobs, the machine has handled moist sand, clay, gravel, cracked rock, earth and sod. Users have recorded that, in such applications experienced to date, capacity of the equipment has not been equalled by the number of trucks available.

Travel speed of the windrow loader is 10 miles per hour. It turns in a radius of eight and a half feet.

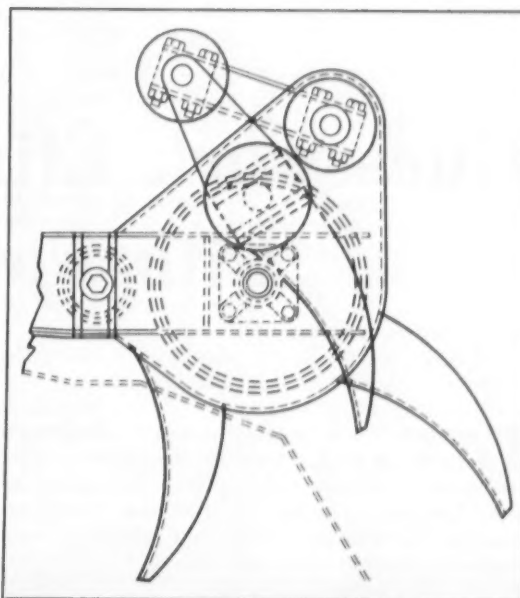
Material is "clawed" from the ground by three "spades" operating on eccentrics and rocker arms. These dig into the windrow, reducing lumps and clumps, where required, into more easily handled sizes for feeding to the belt. If a tough obstruction is encountered, the entire feeding mechanism raises up and returns to operating position automatically.

To minimize service and maintenance under the tough and abrasive conditions likely to be encountered, the "claw head" has been equipped with Arguto oilless bearings. There are three such bearings on each of the three spades.

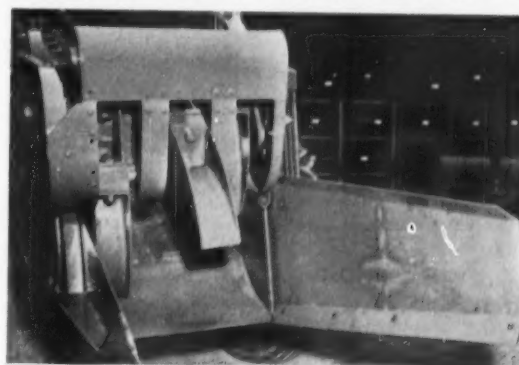
The 18-inch, cleated conveyor belt discharges at a height of 10 feet, with an overhang of eight feet. It permits loading without chutes or swivel heads and an adjustable, side-discharge baffle is provided.

The equipment is mounted on a rubber-tired John Deere tractor. A protective rail under the conveyor boom prevents trucks from backing too far under. A wire guard protects operator and tractor.

Illustrations courtesy Barber-Greene Company.



ABOVE: Sketch shows positions of oilless bearings (circled) on one of three spades, designed to minimize wear and service needs. BELOW: Close-up of feed end.



TRUCK SCALE weighs rolls of paper as they are loaded onto a truck for delivery to a production plant. Operator simply reads a scale dial (arrow) for accurate weight. Two such scales are used in the general stores department.



Guesswork Eliminated at Ford with Fork Truck Scales

IN an operation as large as Ford Motor Company's River Rouge plant, the importance of a non-productive stores department could easily be lost among the more spectacular, high-speed production operations. And yet, the receiving, storage and issuance of non-productive supplies can create serious delays in production if not delivered promptly.

So, in an effort to improve even more its already efficient operation, Ford's General Stores, Shipping and Receiving Services, Manufacturing Services Division, obtained two Martin-Decker fork truck scales in order to accurately weigh outgoing materials as they are picked up by the fork trucks. The significance of this decision becomes more apparent when the overall operation is considered.

Said to be the largest industrial non-productive stores department in the city of Detroit, the one at Ford occupies some 130,000 square feet of floor space. There, non-productive supplies are received and stored, then issued to the various departments in the River Rouge plant. Supplies involved include such items as tools, abrasives, plumbing, chemicals, electrical supplies and hardware of all kinds.

And, despite the fact that approximately 1½ million pounds of supplies are handled each week, requisitions get one-day service. In fact, special orders are

often filled in 20 minutes. This service is even more noteworthy when it is considered that approximately 2200 orders are filled each day. As a general rule, orders received by 3:00 p.m. one day are filled by 3:00 p.m. the following day. This requires a three-shift operation, seven days a week, including holidays.

The operation requires three rider-type fork trucks and three walkie-type trucks, one of the latter being a high-lift pallet type for stacking in restricted areas. Incoming supplies are received either by rail car or truck. They are unloaded by fork truck and are broken down into five group classifications on the receiving docks.

Locating Supplies Facilitated

These five group classifications were established to facilitate locating the supplies in the storage area, which has been divided into five main locations. The classifications include: (1) abrasives and machine repair, (2) tool stock, (3) electric and miscellaneous, (4) millwright, including plumbing, bagged chemicals, belts and material in barrels and (5) electric motor and speed reducer pool.

The electric motor pool, incidentally, adds greatly



STORAGE AREA in the general stores department contains more than 34,000 items exclusively for use in the company's various manufacturing divisions. Although some 2200 orders are filled each day, each one gets one-day service.

to the overall efficiency of the plant. This motor pool provides the Rouge plant area with 20-minute emergency replacement service.

In the storage area, most supplies are stored on pallet racks, and first-in items are removed first. A stock-numbering system is used to locate supplies, and three sets of numbers are used: one to identify blueprint, or special items, another for standard items and the third for commercial items, such as hammers, wrenches and pipe, which can be bought off shelves and which are carried under non-productive code numbers.

By accurately weighing each load, or order, an exact record can be kept of weights of material sent to each of the other manufacturing departments. Prior to the installation of the scales, most of the figures

were estimated or subjected to guesswork. In all fairness to the checkers and operators, the estimated figures were fairly close—but not close enough.

Two of the three fork trucks used in the warehouse are equipped with these scales, which are actuated by the hydraulic cylinders of the trucks. As loads are lifted off the floor for movement, the truck operator merely has to read a dial to tell what his load weighs. And, naturally, compensations are made for the weight of pallets and containers.

The scale-equipped trucks are used for other purposes also. For instance, certain items are shipped to the productive activities in locked cabinets, and these cabinets are sometimes returned to the warehouse before all the supplies inside are used. Knowing the
(Continued on page 144)



WALKIE-TYPE FORK TRUCK is used to stack incoming load of materials in storage area. Most of the supplies are stored on pallet racks, as seen here.



CONVEYOR LINE services small packaging area, in which breakable items are packaged to insure safe delivery to the activity which orders these supplies.

Continuous Automatic Production



P. H. Alspach

P. H. Alspach, Manager of Manufacturing Development, Manufacturing Services Division, General Electric Co., holds that industry is in an irresistible trend toward full automation—which, even now, can be profitably studied by almost every type of plant and business.

TO SOME PEOPLE, automation means mechanization, to others material handling, and to still others, "the automatic factory"—words that conjure up visions of robots running machines and factories without men. Actually, these words have little or no bearing on the industrial concept of automation today.

The industrial interpretation of Automation now is *continuous automatic production*. It is a way of manufacturing based on the *continuous flow* concept, rather than the batch concept. It embraces all the manufacturing operations—making, inspecting, assembling, testing, and packaging. This concept will have a direct and marked effect on our labor, manufacturing facilities, products, and profits during the years ahead.

Automation has been a long time coming, even though an inventor named Oliver Evans built an automatic flour mill near Philadelphia back in 1784. By automatic, we mean the use of a number of mechanical devices which transformed a surprising amount of hard, manual direct-labor, into easier but more rewarding indirect labor. The important thing to know, however, is that automation is not a second Industrial Revolution. Its nature is evolutionary, not revolutionary.

Automation, as it has developed, is a way of manufacturing. It is built upon the solid foundation of progressive, step-by-step upgrading of both our manufacturing operations and people.

The metal working industry is ideally suited to illustrate the progressive steps of industrial development. There was the *manual area* of manufacturing—many people combining to produce one unit at a time, first only by hand and then with the aid of hand tools and simple material-handling equipment.

Next, there is the *mechanization area* where mass production results from the use of the power-driven machine and the simple conveyor.

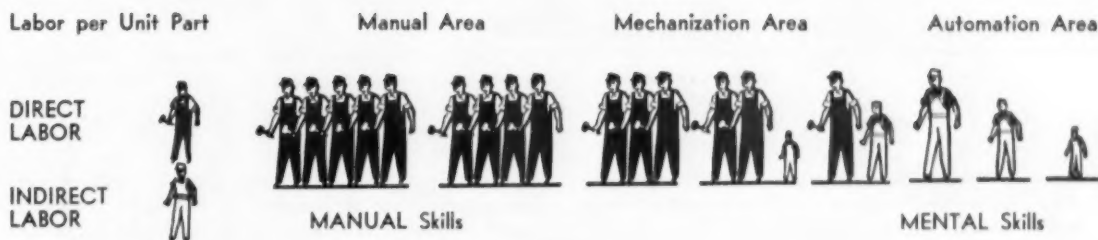
The addition of increasingly complex controls leads us to the automatic stage in which many operations can be performed. The job of the production worker has been limited to no more than loading and unloading the automatic machine, while the amount of supporting, or indirect, labor required for maintenance has increased.

Automation Area

We are now ready for the *beginning* of the *Automation Area*. Here, *continuous automatic production* starts with the fully automatic machine integrated with transfer devices to perform a series of operations. The production worker, as we know him now, has been trained and upgraded to become the skilled machine specialist or maintenance expert. By logical steps these machines are grouped into *automatic units*. The units are then grouped into *automatic systems*, the systems into an *automatic section* and finally, we see that someday in the future maybe the *automatic factory* will emerge.

Although the automatic factory is a long way off, it can only result from a continual, progressive upgrading of our people and operations. It certainly will not come by just the sudden, uneconomical application of money and effort. Except in process industries, such as chemical, petroleum refining, and some foods—industries where the products are fluid—automatic factories are rare.

Today, the opportunities lie in doing the job at hand with the tools available—that is, progressively upgrading our operations and people in the Mechanization and into Automation Areas.



People—

The trend toward Automation began in the forties and has picked up momentum ever since. And for several good reasons. First, it is the next *progressive* step of industrial development. Second, it is estimated that this country by the end of the next decade will be consuming products at twice our present rate, while the available work force is expected to increase by only 11 percent. Third, no industry could ever begin to afford doubling its present floor space in order to double its output—let alone afford the additional capital investment for equipment and materials. The answer is increased productivity.

But how do we get this increased productivity?

By progressively upgrading our factories and our work force towards automation. That means investing money in *improved* processes and more *automatic* equipment, rather than more buildings filled with the same old kinds of equipment, using the same old processes.

There are two main factors today that determine the extent to which automation may be applied *economically*—volume and nature of the product. For the purposes of this discussion, the “nature” of the product is considered to include the elements of product design, product standardization, and materials and processes.

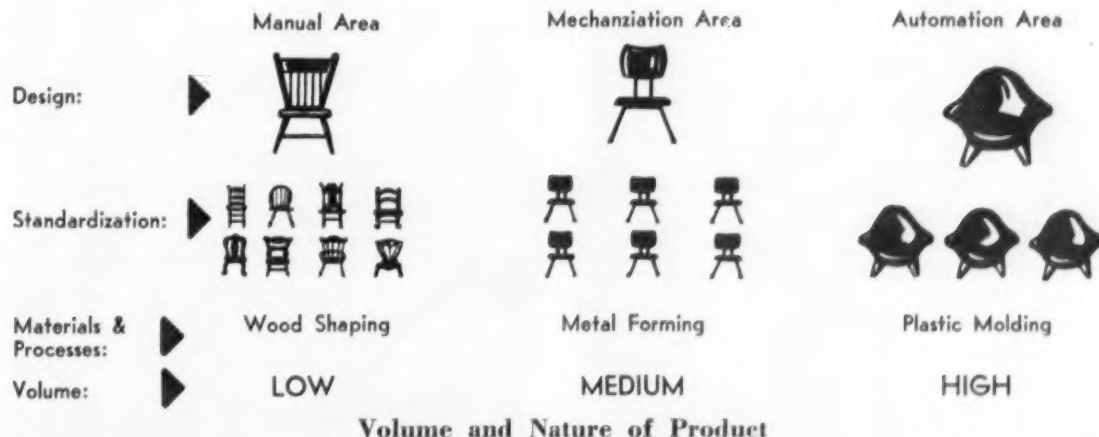
First, let's look at product design and see how it influences automation.

We consider three chairs. The chairs are fundamentally the same—something to sit on—but the design of each is different. In each case, the chair was de-

signed to suit a particular area of manufacturing. In the *Manual Area*, the chair was designed so that it could be made by hand, or with hand tools. It required many manual operations. In the *Mechanization Area*, the metal parts of the chair were designed to be formed on machines and hand assembled. It required fewer manual operations. In the *Automation Area*, a fresh approach to chair design has been taken. The “blast-away” technique was used. The manual operations were designed *out* of the product by using a different manufacturing process and different materials. This last example not only points up the challenge to designing for the Automation Area, but also points up the fact that the eventual extent of Automation is dependent, to a large degree, upon how well our design engineers meet this challenge. The number of manual operations designed *out* of the product is a key to economic Automation.

Product Standardization

Now let's look at product standardization. In the *Manual Area*, there are eight chairs. Here each is different. It's not much more difficult to make them different, or to make a “special,” than it is to make them all the same. There is little tooling and production is low. In the *Mechanization Area*, standardization becomes important because we are now getting into tooling costs and interchangeable parts. In the *Automation Area*, standardization is of the utmost im-



portance. Here the chairs are all the same—except for color and trim, they are all made on the same tools.

Next to product design, the important factor of any Automation program is standardization of the product or parts. Unless we are constantly trying to standardize our products—standardization that builds volume—we will find that we are operating under job shop conditions in the manual and mechanization areas while our competitors are operating in the automation area.

Let's see how the various materials and processes affect us. There are generally several different ones that can be used to make a part or a product. The manufacturing engineer and design engineer must work together during the designing of the product to select the best material and process. Certain of these adapt themselves more readily to the *Automation Area* than others. In the *Manual Area*, the wood chairs are shaped with hand tools and assembled manually. In the *Mechanization Area*, the metal parts for the chair are stamped out on machines and assembled manually. In the *Automation Area*, the chair is made of plastic, and molded completely in a machine.

The second main factor that determines the extent of economic Automation, is *volume* of the part or product. The low-volume chair falls in the *Manual Area*, the medium-volume chair falls in the *Mechanization Area*, and the high-volume chair falls in the *Automation Area*. This classification is determined, to a large extent, by such factors as manufacturing costs, styling, and customer demand. In most cases fairly high volume is required to economically support an Automation program.

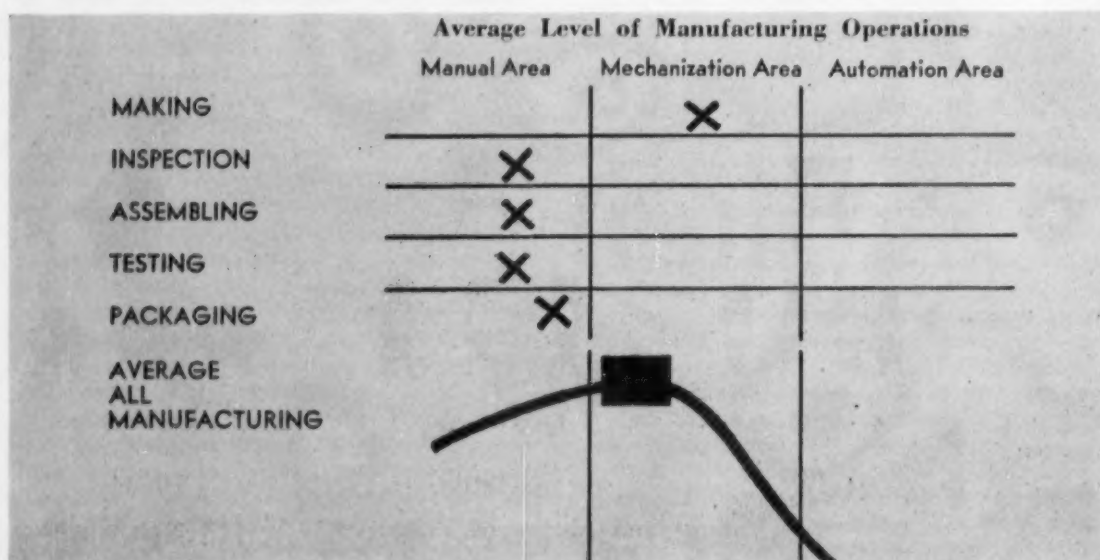
There is a place for Automation in each of our businesses—large or small. The extent to which it can be applied economically is determined not by the size of the business but rather by the volume and nature of the products manufactured. In job shop functions, there are often some high-volume operations (with many manual operations) that lend themselves to automatic manufacturing methods. While we have been looking at automation at the product level it generally takes place several steps below that level. In other words, automation is generally applied to components and subassemblies of a complete product. For instance, the four legs of the chair in the *Mechanization Area* possibly could be automated.

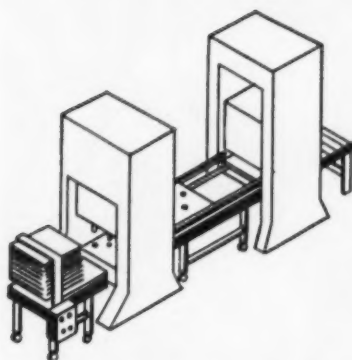
Low-Production Items

Even with low-production items, such as large motors, the production of laminations—which is high—may be automated. Another example, would be a turbine blade in a jet engine. Here, the production of jet engines is low but the number of turbine blades required per engine is high. An entire department or section need not be automated—it may be only a few machines at first, then progressively, as experience is gained, Automation may be applied to other operations.

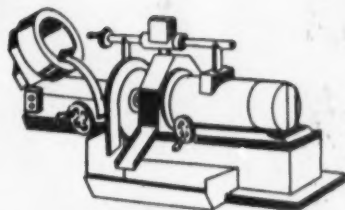
Now let's see how all of this affects people and manufacturing facilities.

Skills in the *Manual Area* are being progressively upgraded until we require the mental skills in the *Automation Area*. Also, the *manual* direct labor-work will be progressively transformed into work which will be cleaner, easier, safer, and more rewarding for the worker who—through the process of automation

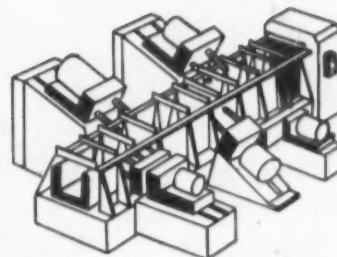




CLASS A: Standard Machines with Transfer Equipment Added



CLASS B: Standard Machines CLASS C: Special Machines Using Equipped with Transfer Devices Standard Components



Classification of Equipment in Automation Area

itself—will be trained for the more skillful accomplishments and assisted towards the better jobs of the future.

The trend toward automation has already played a big part in upgrading the labor force. For one thing it takes a specialist with a high degree of skill to run many of the new machines. For another, the problems of maintenance multiply as the machines become more complex. Thus, both the operator and the maintenance man have been upgraded and generally have gained their new skills on the job.

Now let's look at the manufacturing facilities again, and see how the material handling equipment is integrated with the process equipment when we reach the *Automation Area*.

To simplify the discussion of equipment in the *Automation Area*, we have divided it into three broad classes—Class A: Standard machines with transfer equipment added. A large number of existing machines may be automated today by the addition of transfer equipment.

Class B: Standard machines equipped with transfer mechanisms. Many machines may be purchased, today, equipped with transfer mechanisms, or they are designed for the addition of such equipment.

Class C: Special machines using standard components with transfer equipment. This class of equipment usually is intended for special applications combining several operations.

One way to tell in which manufacturing area your operations lie is to look at your plant layout, for this is the summation of all manufacturing planning in visual form. In it you can see your material handling equipment, process equipment and to a certain extent, product design and standardization. Your plant layout also indicates the amount of direct and indirect labor; that is, the graduations of labor skills from the purely manual to the purely mental.

Now what type of layout have we in a *Manual Area*? It is a *process layout*, where the punch presses are in one section, assembly in another section, painting and finishing in still another. Here the parts are moved in lots from one section to another, with each section performing its own operations.

In the *Mechanization Area* there is a combination of a process layout and a product layout. Here the high-volume parts have been taken out and set up in a product layout.

A *product layout* is where the equipment is arranged in the order of the operations required by the product. It is the straight-line type of layout where you may have a punch press, an assembly operation, and a finishing operation all in the same area.

As we progress into the *Automation Area* we find that the whole section is laid out around the product layout where the material flows between operations.

It is up to *Management*—management with vision, enthusiasm, imagination, and courage—to apply Automation, this *new way of manufacturing*, to their business. They must determine the degree of automation that their business requires and can support economically—then develop an over-all, progressive, step-by-step program, and see that it is properly carried out. Management must also determine what changes will be made, whether in training programs, product design, standardization, manufacturing processes, equipment, or plant layout. Some, or perhaps all, of these may have to be altered in order to execute a successful automation program.

The trend towards Automation will become increasingly irresistible in the years ahead, and the diehards who refuse to accept it will, over a long period of time, find that they no longer are competitive with the rest of industry.

The effect of Automation will be felt on all functions of the business—not just manufacturing and engineering alone. At first, the influence will be slight, but as the continuous automatic production concept is carried out, the effect will become all-inclusive. To be competitive in the years ahead, industry must be planning its *progressive steps to automation* today.

Mr. Alsop first included this information in a talk he gave during the recent AIEE Conference on Machine Tools, in Detroit. FLOW thanks the American Institute of Electrical Engineers for the opportunity to present this article.



TRUCK'S FORKS run directly into forge, pick up die after production run, return it to storage.

Douglas Cuts Die-Handling Costs

DOUGLAS Aircraft's El Segundo, California Division is setting records when it comes to efficient and rapid handling of dies between storage areas and the drop hammer departments.

Die storage and handling used to be a costly, time-consuming procedure when dies were taken out of storage, loaded on trailers, towed to a hammer, lifted from the trailers and then placed in position. Not only did this procedure consume time, but valuable production hours were also lost by men waiting at the hammers for a new die to be placed into position and the

old die removed. Die handling under old methods was hazardous, since there was the danger that dies would be dropped, workers injured and facilities damaged.

Handling of dies at Douglas is a major problem when you consider that more than 6000 dies weighing up to 39,000 pounds each are stored in an inside and an outside storage area that encompasses five acres. Most of the dies are located in the outside storage area which is 40 feet wide and 2000 feet long. Each set of dies is catalogued, marked and assigned a definite location in the storage area.



HUGE DIE is lifted up and into forge by 18,000-pound capacity fork truck. One man does entire job easily.

Five die handling fork trucks have helped this company cut its handling costs appreciably and have increased productivity by faster handling. This equipment includes a 25,000-pound, three 18,000-pound, and a 10,000-pound capacity fork truck. All are equipped with hydraulically adjustable forks.

New Handling Plan

The new plan of handling dies from storage to forge operates in the following sequence: At the hammer house the crew has completed a production run on one part and wants to start a new production run on a different die. The identification number of the new dies is phoned to a central dispatch station which is in 2-way radio contact with the fork trucks. The dispatcher sends one fork truck to the forge to remove the old die and return it to its location in storage. A second truck is dispatched to die storage to select the new die and carry it to the drop hammer department. This operation can be accomplished in one of several ways, depending upon the die.

Three Methods Used

Using one method, a fork truck with a yoke and chain to which metal dowels are attached is placed over the forks and swung into position. The metal dowels are slipped into holes which have been sunk in the dies. The forks are elevated, the die is lifted out of storage and carried up to and placed in the forge.

Other dies are handled by inserting the forks of the truck directly into channels which have been built into the base of the die.

A third method of die handling is that the forks are hydraulically squeezed together so that the inside edges of the forks fit into grooves which have been cut in the outside edges of the female die.

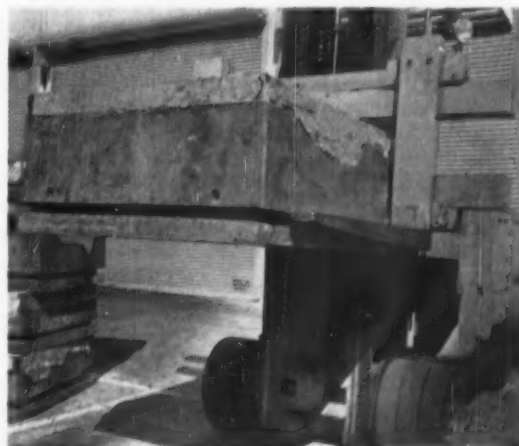
The teamwork created by these fork lift trucks working in conjunction with each other keeps productive time at the hammers at a high level and has helped increase production of five different Navy carrier planes at this plant.



TWO-WAY RADIO speeds handling—directs truck operators to die storage area, hammer house, forge.



FORK TRUCK returns dies to storage area where they are systematically stacked four and five high.



GROOVE cut into base of female dies simplifies handling, as operator merely slides forks into the slots.

A Practical Manual of Material Handling Procedure

Installment 8

Section 9: ELEMENTS OF A PROBLEM AND GENERAL RULES

By Robert C. Brady

THE CHECK LIST and flow chart with a flow diagram pinpoint the step by step procedure of material flow. But they do not give us all the information on elements which must be considered. In general, what is the *total* problem; what does it include, and what is the final objective?

Specifically, data must be gathered on the following elements in a material handling problem: (Review Section 2, *Types of Materials Handled*, and Section 3, *Types of Handling Movements*.)

1. **Materials:** Properties, characteristics, size, shape, dimensions, weight and quantity.
2. **Containers:** Description, size, shape, etc.
3. **Movements:** Routing, distance, origin and destination.
4. **Frequency and speed:** How often, how fast, what are production cycles and daily requirements?
5. **Float and storage requirements:** How much and where is the material to be stored.
6. **Building facilities:** Ramps, roadways, elevators, etc.
7. **Labor:** Who moves the material?
8. **Equipment.**
9. **Cost:** Putting all of the other elements together and adding a price to them will give a cost of material handling in your facilities.

This type of analysis automatically determines whether or not existing facilities will effectively accommodate the required work load. At the same time reductions, additions or modifications that may be required to present buildings can be determined. With this kind of data properly recorded, a review can be made at any time.

Obtaining a good, practical solution and your final objective depends on two further elements. First, basic data, such as we have suggested, and a thorough analysis of that data. As in any other scientific or mathematical problem, there are many rules, specific and general, which must be followed. In reviewing over 85 such rules, we find that they fall into five major operational functions of management. These are *methods, planning layout, working conditions, train-*

ing personnel and equipment.

Methods

1. *Perform only necessary operations.*

Unnecessary picking up, moving and setting down add to overall operation cost.

2. *Determine best methods.*

It is necessary to establish the best methods of handling with regard to particular conditions.

3. *Eliminate handling by production workers.*

In every time study, a large proportion of time is given to the handling of material to and from processing equipment. Sheet feeding tables, stock positioners, conveyors and other types of equipment help to reduce handling by production workers.

4. *Synchronize operations.*

Where an operation is dependent on a previous operation, synchronize the time so that full effort is gained from all workers and equipment.

5. *Avoid manual transfers.*

Provide adequate equipment so as to eliminate transfer of material from floor to container and vice-versa, or from container to container.

6. *Avoid sorting.*

Don't mix materials; keep sorting to a minimum. Also provide means for accurate count of items.

7. *Investigate packaging, containers and unit loading.*

Consider the possibilities of protective packaging, containers, unit loads and self-supporting units of raw and finished materials so that advantages of mechanized handling may be used.

8. *Provide mechanical aids.*

These can increase the speed of handling operations, reduce overall production time, reduce the amount of material between processes and increase the rate of capital turnover.

9. *Fully utilize men and equipment.*

Lower unit cost of material handled depends a

great deal upon the full utilization of manpower and equipment available.

10. Plan scheduling and control.

Schedule handling operations, schedule delivery and removal of materials to avoid delays, control materials to utilize maximum capacity of handling system set-up.

Planning Layout

Material handling operations are only as effective as the physical layout will permit. There are in existence many factors which contribute to unnecessary handling of materials. Not many engineers, for instance, are given a new building to lay out—one which has unlimited opportunities for putting in proper aisle widths, sufficient storage capacities and other items conducive to good handling operations. Most attempts to correlate material handling and plant layout are concerned with buildings with physical dimensions already established.

1. Keep overall problem in mind.

A survey of the entire operation in the beginning will help in the solution of any individual departmental problems. Having data on overall requirements will prevent an installation, in one area, which would result in added handling farther on in operations. Knowing the overall problems will show the bottleneck areas which need attention first, when you are going at the problem in small pieces.

2. Plan straight line routes.

The basic concept of layout is the planned flow of materials. The application of material handling equipment makes possible a better flow between processing operations. The most effective use comes when materials are moved over a minimum of planned routes, which avoid congestion and delays resulting from back hauls, cross hauls, transfers and other unnecessary wasted movements.

3. Coordinate the flow.

Provide continuous flow when practical, and perform processing operations while materials are in motion if conditions permit. Provide adequate service when intermittent flow is required, and coordinate the flow of all materials which go into batches, sub-assemblies, etc.

4. Lay out receiving and shipping areas.

The following items should all be given consideration when checking receiving and shipping operations: Adequate area; location of area; building limitations; unloading layout, capacity and facilities; material handling equipment utilization; checking, weighing, and receiving inspection; local containerization; distribution facilities; distribution arrangements and accessibility; and provision for schedule changes, overloads, underloads and fluctuations.

5. Lay out storage areas.

The following factors are applicable to any storage area: Dimensions of storage areas; building

limitations (with safe floor-loading), location with regard to receiving, shipping and production; warehouse arrangement; arrangement for rate of stock turnover; plan for maximum-minimum capacity; first-in, first-out plan; ease of identification and inventory; accessibility of fast moving items; local containerization; standardization of containers and unit loads; full utilization of material handling equipment; and provision for schedule changes, overloads, underloads and fluctuations.

6. Lay out production area.

Arrange processing equipment for least amount of handling; provide maximum mechanization in flow of material; reduce work in process; establish intake and discharge points at processing and assembly areas; provide adequate aisles; insist on proper use of material handling equipment; position material at work level; arrange for inspection area, scrap removal and miscellaneous handling facilities; provide for local containerization and standardization of containers, identification and quantity, schedule changes, overloads, underloads and fluctuations; and arrange for alternate methods of handling.

Working Conditions

The application and usage of material handling equipment reduces the amount of man-handling of materials—back-breaking lifting and shifting.

1. Increase safety.

The high cost of lifting is one of the big hidden costs in material handling. The lifting and shifting of materials causes approximately 25 percent of industrial accidents; only 4 percent of the labor force causes them. Records prove that a safe factory is an efficient factory.

The provision of safety guards on equipment, insistence upon safe operating practices, good lighting, good housekeeping and other facilities for the comfort of the worker are all necessities in an accident-prevention campaign.

2. Reduce fatigue.

Studies of personnel show that productivity is increased as fatigue is reduced. Rest periods, mechanical equipment and other aids have been introduced in plants to make workers more alert, effective and safety conscious.

Training Personnel

The analytical approach to problems and specialized training programs are designed to overcome the limitations of "learning by experience".

1. Whom to train.

There is not a single group in operations which does not need material handling training. Top management, middle management and worker personnel all need to become acquainted with the fundamental rules of material handling and become conscious of how these rules affect their work and cut across all other industrial lines.

(Continued on page 142)

Conveyorized Storage for Small Items

CONTINUOUS control of small component, parts, and commodities is a costly concern of many companies. How and where such control is exerted in a number of different types of firms—through use of bin boxes and conveyorized storage racks—shows the areas in which savings can be made.

Where it is necessary to move small quantities to point of use, as required, the system allows centralized storage and continuous flow. It thus overcomes, inexpensively, the difficulties which are often encountered in processes which are inherently batch type. A glance at the conveyor bank shows how many full bins are available at any time.



CONSTANT supply to production workers at far end is provided by storage racks shown here being loaded.

One firm places an order stocking card in each bin. When a container reaches the conveyor exit, a workman turns the card over to his foreman, who uses it as a notice to re-stock or reorder parts in that line.

Through loading of bins with standard counts of items, inventory control is greatly simplified. One firm has reported that an installation paid off through savings in accounting procedure alone.

Area Utilization

In addition to mobility and visibility, the bin-conveyor-rack arrangement utilizes maximum cubic area. Depth is the dimension most usually wasted because it must be limited to the reach of man or machine. Aisle space often actually exceeds storage area, especially in low-ceiling areas. There is virtually no limit to the length of racks upon which bins can be stored—and moved as desired—from one end to another.

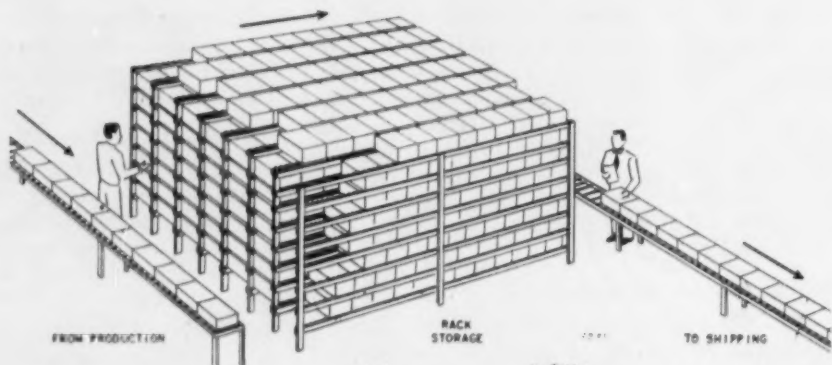
A paper products manufacturer, stocking thousands of items from which orders are accumulated, has found that a conveyorized storage system allows the selection of five items in an area formerly devoted to one.

With a skate-wheel rack system, an electrical manufacturer utilized space adjacent to assembly lines to assure a continuous flow of parts to assemblers.

A supermarket in the East installed a live-storage system to eliminate "stock-in-aisle" traffic jams and the expense of manual restocking. Conveyorized racks were set up with one end in the stock room, the other available to customers, for such items as detergents and soaps.

(Continued on page 145)

TYPICAL "bank" type set-up, adaptable to many kinds of assembly & storage operations.





Towmotorize your handling problems

Towmotor Upending Roll Clamp lifts, turns and high-stacks rolls mechanically. Cuts handling time and costs up to 80%.

On certain jobs, a job-planned Towmotor performs more efficiently and more economically than fork-equipped lift trucks. Write for Certified Job Studies giving facts on materials handling savings in *your industry*.

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1226 E. 152nd St., Cleveland 10, Ohio.

FOR FAST ACTION—See your nearby Towmotor Representative. He's a materials handling specialist. His factory training will show you the quickest way to attain maximum handling efficiency at minimum cost.

TOWMOTOR
THE ONE-MAN GANG

Job-Planned **FORK LIFT TRUCKS**

Circle No. 197 on Reader Service Card for more information

Here's a big new MATERIALS

SAVES SPACE SAVES HANDLING SAVES WASTE



SHIPPING DEPARTMENT SUPPLIES are kept neat and orderly on FLOW-RACK. Employees reach for the exact carton needed, when last carton in bundle is removed, the next bundle automatically moves to the front of the rack. FLOW-RACK is adaptable to product size, width and weight as well as volume requirements.



ON-OFF DELIVERY PROTECTS GOODS from the hazards of multiple handling. Fragile items are safe from shifting, bulky items are easier to handle without risk of dropping, and there is no danger of bottom-of-the-stack crushing in heavy goods. It's a safe trip for all from start to finish!



FIRST-IN-FIRST-OUT (FIFO) keeps fresh goods moving forward in order of production. Especially important in the food and drug field, the elimination of spoilage and out-dated goods losses is of prime concern in many industries. FLOW-RACK automatically "remembers" first things first.



**Flexible and completely portable *Rapistan*
FLOW-RACK can be installed overnight**

Your own employees can take care of FLOW-RACK installation, and its easy put-up, take-down construction makes it entirely removable for use in other locations. It costs less than conveyor alone, and only a little more than ordinary wooden bins. Rapistan's mass production methods give you FLOW-RACK life-time efficiency as low as \$2.25 per hatch foot. FLOW-RACK's "free-standing" design requires no walls or partitions, and needs no braces or supports. It is made of rolled steel with a corrosion-resistant baked enamel finish. FLOW-RACK is produced in 6 ft. rack height for normal reach, but may be any width or length over-all — and with flow-track suited to the size, weight and nature of any product. It can be extended to increase volume capacity at any time, and with minimum cost. FLOW-RACK uses cost-free gravity . . . requires no mechanical servicing, repairs or replacements.

***Rapistan*
FLOW RACK**

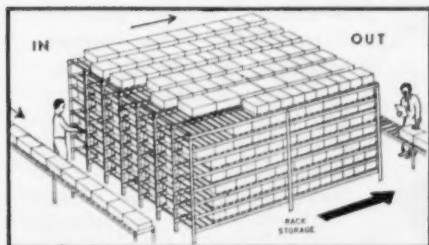
Produced for modern industry by
THE RAPIDS-STANDARD CO., Inc., Grand Rapids 2, Mich.
SPECIALISTS IN MATERIALS MOVING, GRAVITY AND POWER CONVEYORS FOR INDUSTRY

development in HANDLING

Rapistan[®] **FLOW RACK**

**ends costly congestion
and delays**

Materials handling bottlenecks that cost time, effort and money are eliminated by FLOW-RACK — Rapistan's new "conveyorized storage". Visible, orderly inventory is automatically maintained in working or assembly areas. Stock is kept in ready reach, and kept rolling on FLOW-RACK. FLOW-RACK provides greater storage capacity in less area . . . gives greater visibility, accessibility and selection; makes possible "at a glance" inventory and point-of-use materials control. And because the fingertip control of FLOW-RACK saves reaching, dragging, lifting and carrying goods from distant locations, it is safer for both employees and merchandise. FLOW-RACK increases employee capacity by reducing walking and hunting, reduces space required for aisles in storage areas. FLOW-RACK gives you top capacity in every foot of space!



**• There's a place for FLOW-RACK
in most industries:**

- Cosmetics
- Food Products
- Drug Specialties
- Hardware
- Grocery Products
- Frozen Foods
- Dairy Products
- Cartons, Boxes
- Batteries
- Bakeries
- Mail Order Houses
- Phonograph Records
- Electronic Parts
- Automotive Parts
- Clothing, Shoes
- Candies
- Paper Products
- Ammunition
- Radio, TV Parts
- Parts Jobbers



FLOW-RACK advances the next tote bin (carton, package or part) in line as each is removed from the gravity roller track. This cuts materials handling steps to a minimum: put the bin on at one end of FLOW-RACK — take it off at the other end!



FLOW-RACK REPLACES this space-consuming, disorderly stacking and crowding. It simplifies inventory control, cuts handling time, accounting procedures, errors and delays. You can tell at a glance the total stock on each FLOW-RACK, know when stocks are low or depleted — avoid misplacing, awkward stacking and extra lifting, shifting, carrying.

DIAGRAM AT LEFT shows the easy IN-OUT operation of FLOW-RACK which results in greater storage and handling ease with fewer steps, less strain and confusion.

**FREE
SAMPLE**
of FLOW-RACK
components
request it on
this coupon with
your letterhead.

The RAPIDS-STANDARD CO., Inc.
173 Rapistan Bldg., Grand Rapids 2, Michigan

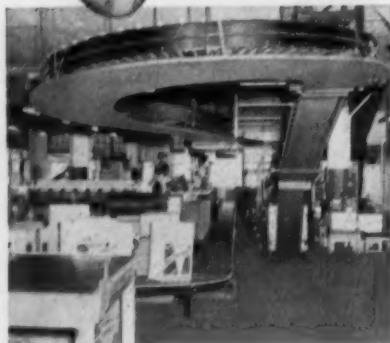
Show me more about FLOW-RACK with a FREE
SAMPLE and complete facts and figures!

NAME _____
FIRM _____
ADDRESS _____
CITY _____ ZONE _____ STATE _____



Want to move things

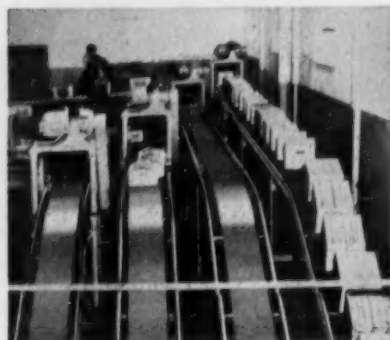
up →



For lifting or lowering — floor-to-floor — the INCLINEBELT

Continuous package conveying — a complete belt conveyor system or the Inclinebelt—complete, compact easy-to-install, electric-motor powered unit. High, continuous-line load capacity for any floor elevation. Available in belt widths of 8-12-14-18-24-30 and 36 inches.

down →



For inclined or horizontal conveying — the UTILITY BELT-VEYOR

Conveys from floor-to-floor. Moves "packages" down, up or horizontally. Electric motor powered. Installs over existing stairways, or can be used as a portable Levelbelt conveyor. Four standard belt widths: 10-14-20 and 24 inch.

or

horizontally?



For straight line or inclined conveying — assemble your own system or portable conveyor using HANDI-DRIVE pre-built units

These stock, pre-built conveyor units make it easy to assemble what you want in a conveyor. Converts existing gravity conveyor to power conveyor — quickly and at low cost. Can be installed as single portable unit or complete system.

Standard builds conveyors to speed any ONE or all THREE

Call your Standard representative listed in your classified phone book or send for illustrated Standard General Catalog describing all three units—address Dept. FI-124.

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GRAVITY & POWER Conveyors

ROLLER • SLAT • WHEEL
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PORTABLE CONVEYOR UNITS:

HANDIBELT • INCLINEBELT • EXTENDOVEYOR • UTILITY BELT-VEYOR
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PNEUMATIC TUBE SYSTEMS



Circle No. 186 on Reader Service Card for more information

TRANSPORTATION . . .

(Continued from page 63)

case. It should not always be considered as secondary.

The study of frequency and magnitude of demand has bearing upon a number of other transport considerations including:

1. Should products having widely differing demands be shipped in the same manner?
2. Should items having fairly constant demand of high frequency, but relatively low volume, receive special treatment or be handled in the same manner as items with higher magnitude and less frequency, and so on.

None of these problems is ever solved in the absolute sense. There is always a large element of—"Are the objectives and assumptions consistent with each other?" "Are the assumptions reasonably consistent with the facts of life?" It is really through the examination of these facets of the problem that the intellectual integration is obtained.

As examples, we build a number of scientific devices in which the sensitive element is quite small and light and in which the accurate life is no more than several years. The rest of the device is relatively indestructible. A rebuilt device with a new sensitive element is, therefore, considered as equal to a new device by most users. Within the industry there is, then, a pool of sub-assemblies that may be used as a basis for rebuilding. Of course, a certain number of completely new devices must be built from the ground up each year to take care of increased use of the device as well.

The cost of these devices is dominated by certain bulky elements best supplied by subcontractors and the various transport costs. In the case of the new device, these account for 50 percent of the cost; in the case of a rebuilt device, rebuilt at a centralized factory where the usable parts must be sent back to a single location, transport may be as high as 70 percent of the cost. We have here then a problem



The most maneuverable fork truck

■ Maneuverability ranks high among features essential to efficient fork truck performance. Finger-tip control of steering, ability to make sharper turns and operate in narrower aisles, complete accommodation to uneven roadways, effective snubbing of road shocks — these are some of the qualities engineered into Baker fork trucks which make them the most maneuverable in their class — and less fatiguing to the operator.

Automotive type steering assembly with ball-type joints and anti-friction bearings in the steering linkage give you a truck as easy to handle as your automobile. Proper steering

geometry minimizes "scrubbing" of tires. The wide-angle steering axle is mounted longitudinally in jumbo-size rubber blocks. This absorbs road shocks and provides constant, smooth traction and travel despite the most adverse floor conditions.

Write for your copy of the "Baker Handling Library" a new portfolio of actual case histories. The Baker-Raulang Company, 1219 West 80th Street, Cleveland 2, Ohio.

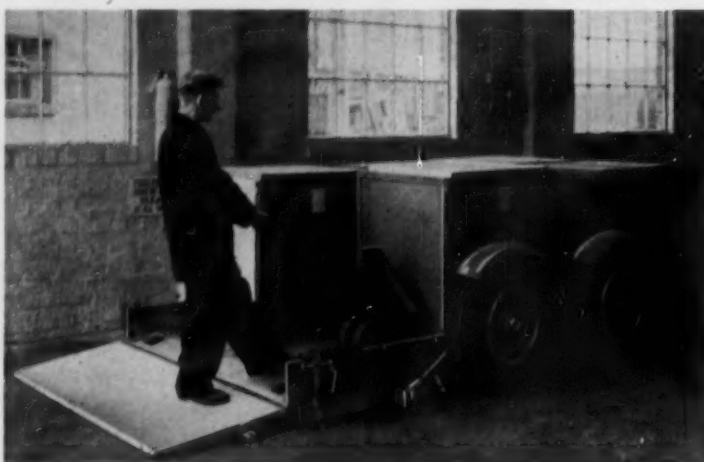
Baker.
Industrial trucks

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EEZION

ELIMINATES LOAD-LIFT

WHEEL YOUR LOAD STRAIGHT ONTO THE
EEZION AT FLOOR LEVEL



Then operate the hydraulic pump—hand or power—to raise the load platform—



The trailer is now ready for the highway. 13 1/2" ground clearance—over run braking serve or pressure brakes on larger models.

No load on hydraulic system with platform raised.

Capacities: 15 cwt, 30 cwt, 3 tons, 5 tons. Special models for carrying cable drums—larger capacities to order.

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TRANSPORTATION

Continued

where transport is a major consideration.

We have here then a high transport cost and a fixed set of distribution points that include:

1. Present distributors
2. Present manufacturing facilities
3. Present location of suppliers of the bulky elements, each of which we identify as 1, 2, 3, up to n , respectively, with i being a typical point or city.

By what means can we arrive at a most economical manufacture and distribution of these devices—a part of which is rebuilt, a part new? Will manufacture and rebuilding at one location be more economical than manufacture and rebuilding at a number of locations—with back and forth transport of material a larger portion of the total cost? If a number of locations are chosen, what portion of a given demand should be supplied from each decentralized manufacturing center for maximum economy, and to where? How many such centers of manufacture shall there be?

Although this problem may be extreme, it also has in it the elements of a more typical problem—where shall geographically dispersed warehouses be located?

The problem is not difficult to formulate between two typical cities i and j , but it becomes exceedingly complicated if we are considering a larger number or a more general case. What we wish to do is minimize the total cost over all n cities.

Consider the formula which begins by illustrating the costs between two cities i and j .

$$\text{COST} = \text{MANUFACTURING COST} + \text{INVESTMENT COST}$$

at, say, city i + $\text{PURCHASE COST of parts for devices that might be made at city } i$ + $\text{TRANSPORT COST OF NEW OR REBUILT DEVICES from city } i \text{ to } j$ + $\text{TRANSPORT COST OF PARTS used or new from city } j \text{ to city } i$.

If we represent:

USE

MONORAIL CRANES

- ... Where Space is Limited
- ... To Handle Variable Jobs
- ... For Low Maintenance Cost



These are just a few reasons why American MonoRail Cranes are gaining in popularity and are being installed in increasing numbers of plants the country over. Call in your American MonoRail representative and have him tell you all the advantages of MonoRail Cranes such as—ease of handling—smooth travel—strength—safety interlocks—power operation and interlocking carrier service between and beyond the craneways. Consultation in connection with any handling problem is available without obligation.

Send for your copy
of C-1 Bulletin



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HANDLING
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DECEMBER, 1954

89

Only **MOBILIFT** gives you *Mobil-Matic Drive**

with HYDRA-LIZER*
in the NEW
**3,000 lbs. at 24"
4,000 lbs. at 24"
FORK LIFT TRUCKS**

Model Shown,
New M-324
with 83" Mast



More Operational and Service Features

- Easy to get on and off from either side.
- Spring mounted rear wheels for riding comfort.
- Combination ball bearing worm and nut type steering.
- One-piece hinged hood for easy access to engine compartment.

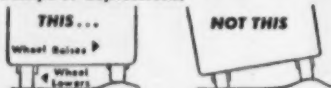
AND MANY OTHERS

* MOBIL-MATIC DRIVE

Fluid coupling, oil-immersed clutch, constant mesh transmission — a combination that transmits power smoothly and efficiently with minimum wear and service. There is NO CLUTCH PEDAL — just ONE push-pull forward and reverse lever!

* HYDRA-LIZER

Another Mobilift exclusive... equalizers mounted on each rear wheel and connected hydraulically to cross compensate the truck when the front or rear wheels pass over bumps or depressions.



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MOBILIFT CORP.**
Home Office: Portland, Ore.
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Please send complete information on ☐ 3000- and ☐ 4000-lb. capacity units to:
Name _____ Title _____
Company _____
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City _____ Zone _____ State _____ 1208

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TRANSPORTATION

Continued

Manufacturing cost for a volume $x_i = f_i(x_i)$

Investment cost for a volume $x_i = kg_i(x_i)$

Purchase costs for a volume $x_i = c_i p_i$

Transport cost of device s_{ij} from city i to city $j = a_{ij}s_{ij}$

Transport cost of t_{ij} parts from city j to city $i = b_{ij}t_{ij}$

we must minimize the sum of such costs for all cities that may be involved minimize

$$\sum_i [f_i(x_i) + kg_i(x_i) + c_i p_i] + \sum_{ij} [a_{ij}s_{ij} + b_{ij}t_{ij}]$$

The expression is of course subject to a number of constraints such as the number of devices shipped from city i to j must be not greater than the number manufactured at city i , and so on.

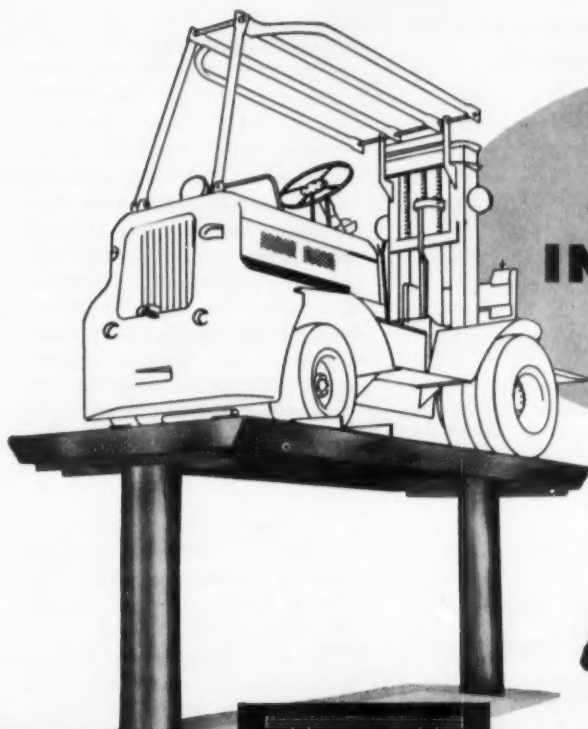
Depending upon the form of $f_i(x_i)$, $g_i(x_i)$, this problem is known as a linear or non-linear program. In either case, it is solvable by well-known methods, and we can find values of quantity to be manufactured, quantity to be shipped from one location, and so on, that will minimize the expression. When they are found, they will indicate the cities in which manufacturing should take place. The quantities s_{ij} and t_{ij} specify the flow of parts and finished devices between cities. The approach is essentially open-minded—any solution from a centralized manufacturing system to a completely decentralized system is possible, depending upon the actual data put in.

F. E. Cummings: "Coordination of the Freight Traffic and Material Handling Functions."

Before evaluating the relative positions of the traffic man and the material handling engineer, I would like to define the material distribution function—which is evaluated in terms of the speed and economy with which finished goods move to the consumer. We prefer to use the term "physical

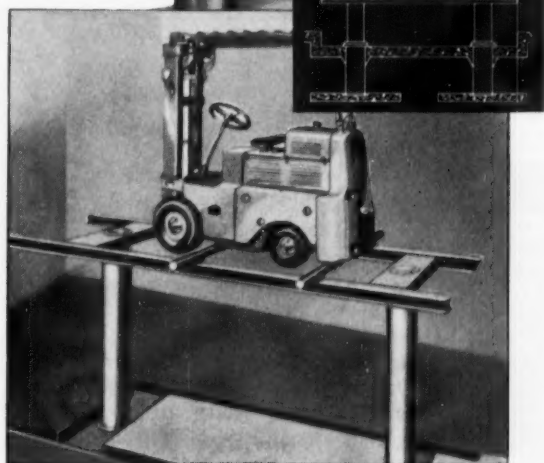
FLOW

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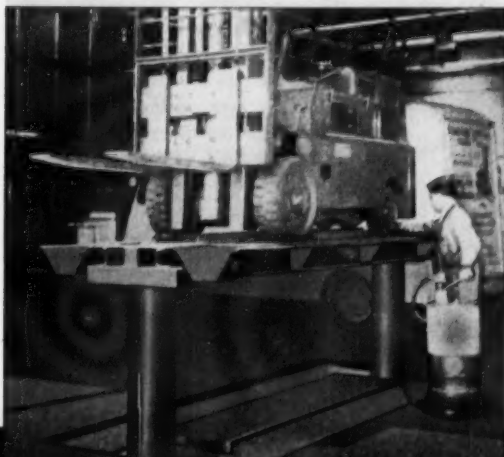


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INDUSTRIAL TRUCK
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Two-post Lift: drive-on or free-wheel types.
Automotive safety leg available.



INSPECT, service, lubricate, repair your industrial trucks safely in double-quick time with a Wayne Service Lift. Just run the truck on the Lift, press control button to raise Lift—your maintenance man can now work in complete safety, easily reach all parts of the truck's undercarriage.

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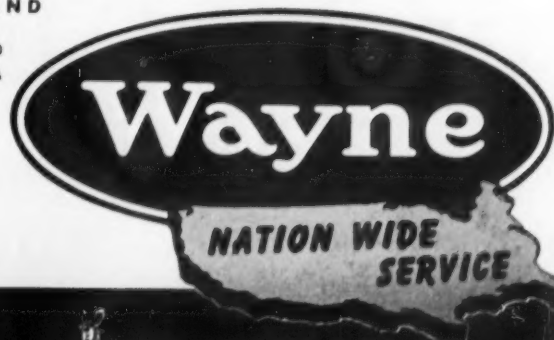
Get rid of dangerous makeshift methods. Get a Wayne Service Lift that's engineered to the job and do a *thorough* truck-servicing in half the time . . . twice as efficiently.

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TRANSPORTATION

Continued

distribution" since material moves only when subjected to physical effort or some other force. Physical distribution is the "control, storage, and movement" of material and covers the shipment and receipt of raw material for processing, inter- and intra-plant movement, shipping to distribution centers, warehousing, and delivery.

Basically, there are three main functions concerned with physical distribution:

1. The Traffic Manager. He is primarily concerned with the external movement of material before and after it passes through the manufacturing process.

2. The Warehouse Superintendent. He may have other titles, but his function is the receipt of goods, storage, delivery to processing, packing, and crating and shipping. Internal transportation normally reports to him.

It should be noted that both of the above are directly concerned with the "control, storage, and movement of material".

3. The Material Handling Engineer. He has no direct concern with the control of the movement of material except in the solution of specific problems. His responsibility is usually limited to problems within the confines of the company property and subject to handling by company personnel.

The very nature of the three functions automatically gives rise to problems requiring coordination. Both the traffic and warehousing functions are concerned with and responsible for the direct flow of material into and out of the plant. They are constantly encountering requirements of detail which must be met immediately and not necessarily in the best way.

R. C. Waehner: "Effect of New Material Handling Equipment and Concepts on Transportation."

The progression of new material handling methods has had a direct effect on the level of tonnage offered to the various forms of transport. In certain industries, some

FLOW

forms of transportation have been aggressive in designing equipment specifically for the needs of that industry. But, by and large, transportation has not kept pace with the development of handling methods in industrial plants.

It is unfortunate that the bulk of railroad rolling stock effectively prevents good material handling beyond the car door. The speed with which railroads provide equipment with wider-door, compartmentized sections and damage-free loading devices will directly effect their carloadings if they take advantage of the unlimited tonnage capacity and, where practical, provide higher minimums with corresponding lower rates per hundredweight.

Highway Handling Lagging

If the motor carriers believe their future assured, a word of caution: material handling in industry is outpacing regulated motor transportation. Development of unitized loads is encouraging industry to favor contract, lease, or private carriers because unitized loads can most efficiently be handled in special equipment not generally available today—such as lengthwise compartmentation of trailers, to support palletized loads and integral conveyors on truck floors to ease loading and unloading unitized loads.

In industry, the perfect climate for the practice of automation occurs where orders for the finished products are placed in advance of production. For example, several of our outstanding national bakeries secure orders from their customers for delivery two or three weeks hence, and production begins on receipt of the order at the production point.

The traffic manager of today cannot consider the unit cost of transportation between point of origin and destination without considering his handling cost to utilize that carrier—as well as the effect of the means of transportation on the cost of unloading to his customer. When evaluating handling costs, it is entirely possible for us to use a higher rated form of transportation and still achieve a lower overall cost.

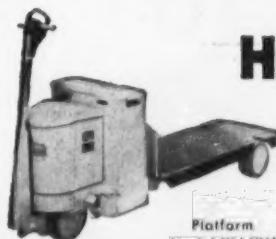
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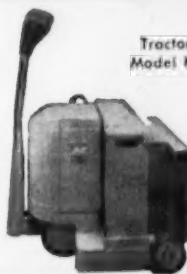
Pallet—Model KPN-KPW



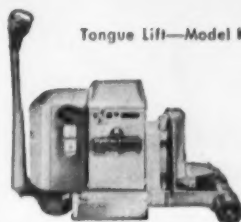
Rider tractor—Model KTR



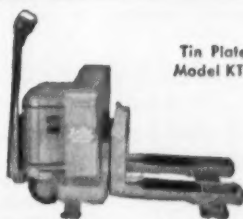
Platform
Model KN-KW



Tractor
Model KT



Tongue Lift—Model KTL



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*For the Heavy Load
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For the Unusual Load*

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TRANSPORTATION

Continued

J. C. Emery: "Reducing Distribution Costs Through Shipper-Carrier Cooperation."

To reduce distribution costs, we must look first for ways to improve the transportation available to industry. But, second, we must look for ways in which industry can make better use of transportation facilities at its command.

The best transportation service loses much of its value if its users in industry fail to adjust their own operations to take full advantage of it. Conversely, even a deficient transportation service can be used fairly effectively by industry if the effort within industry is made.

Communications Provide Marked Improvements

In transportation as in other industry, the science of electronics is playing an increasingly important role. Applied to an L.C.L. sta-

tion operation, it welds the entire facility into a single, integrated working unit. With the electronic communications system, information and orders are passed in seconds instead of by messenger in dragging minutes, for a sharp improvement in the utilization of manpower and equipment.

The savings to the carriers which have been derived from material handling equipment are remarkable. On railroad docks in Baltimore, 10 fork-lift trucks have reduced handling costs from \$1.26 to less than 90 cents per ton. In another instance, similar equipment intelligently used has increased work output per man hour by 75 per cent.

Shipper-carrier cooperation is matched, in its importance to the solution of distribution difficulties, by inter-carrier integration. Coordination of all the different types of transportation has long been recognized as the key to the best in service to shippers. Coordination is not easy for competing carriers, for a variety of obvious reasons, so that in the past it has had to rely on the initiative, ingenuity and routing freedom of shippers themselves. But now, effective coordination is being devised by the railroads, motor carriers, waterway operators and air carriers themselves.

The heart of manufacturing is the assembly line, in one form or another. Materials, parts, and sub-assemblies are brought together at one end or along the sides of this line. The finished, assembled product emerges at the other end. Economy stands or falls at the assembly line, and it results from uninterrupted flow.

Of course, a fast and predictable carrier service, while potentially very useful indeed, will have actual value to industry only to the degree that shippers themselves capitalize on it to their advantage. The carrier can only offer the service which seems to be what the shipper needs. It is the shipper himself who must put his imagination to work, look at his operation as if he were starting it from scratch, and consider how he might rearrange his facilities and personnel on the foundation of the better transportation available.

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General Electric rectifier chargers offer you the ideal way to keep your electric trucks operating at top efficiency.

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If we have imagination and courage, and if we work together, we can indeed reduce the high cost of distribution. Further changes in carrier services may be necessary, just as changes in industrial practices probably are required. These changes do not come easily. They require hard effort, often much time and always much money. But I am sure I can speak for all carriers when I say that we are eager to help work out the improvements in our distributional techniques and to provide the fast, predictable transportation service on which they will be based.

W. F. Rockwell, Jr.: "Material Distribution in 1960."

The word "integration" has particular significance in our day and age. It reflects the tenor of the times, not only in the business world but also in our whole manner of thinking.

We're witnessing a change in emphasis from the specialization of knowledge to the integration of knowledge. Many educators believe that, regardless of one's field of endeavor, a man can do a better job after he has had a broader and fuller basic education than he can with a highly specialized course of study. Even the ardent exponents of vocational and technical education admit the desirability of a curriculum broadened to include what was once known as "the humanities." Researchers speak of the cross-fertilization of ideas that is borne out of knowledge in many diversified areas.

We must re-survey the particulars of science and technology and come up with new approaches and new ideas. But to develop the new broader fields of knowledge, we must again develop versatile men.

Management, too, must learn to integrate its approach to planning for, supervising and operating a plant or company. Only by developing a broader, more fundamental outlook can management free itself from the morass of piecemeal activity. Only then can imagination and creative thought be applied for the continued, successful growth of our industrial society.

Let's take any industrial unit

NEW MERCURY

Yank

MODEL 630
FORK TRUCK



**6000. POUND
CAPACITY**

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Shorter Turning Radius Stacks from Narrower Aisles

Other advanced design features of the YANK 630

- New unit assembled drive axle with universal joint connected motor for quick and easy detachment; self centering hydraulic brakes; full floating axle shafts; Timken roller bearing mounted wheel centers.
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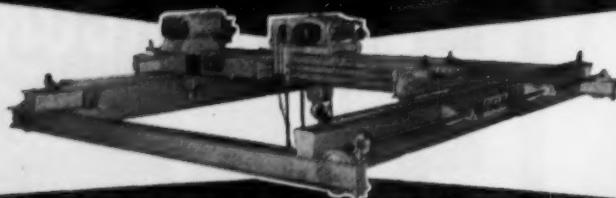
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As a rule a "special" Euclid Crane embodies *standard* hoisting, traveling and control units combined with scientifically engineered bridge, trolley, etc.

The purchaser obtains a crane with a full factor of five, thoroughly tested and proven components, the economy of volume production and the assurance of satisfactory performance due to years of specialized experience.

The above crane has a rigidly mounted hoist and hook; also a hoist and trolley which travels lengthwise of a secondary bridge. This permits convenient and efficient handling of bundled material of various lengths.



Write us for a recommendation mentioning conventional or special requirements.

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PROBLEM: To transport not-too-heavy material, mail, blue-prints, and personnel throughout a large plant economically, safely and with a minimum of fire hazard and fumes, since hauls were inside as well as out.

SOLUTION: A fleet of 1/4-ton Autoettes. Douglas personnel used to walk 7 or 8 miles daily, now cover more ground, make more pickups, carry heavier loads at one-fifth cent per ton mile. Photographers like them too.

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TRANSPORTATION

Continued

that manufactures a product, whether it's gaseous, liquid or solid. Such a unit is representative of every plant in every industry that deals in tangible goods. Broadly speaking, every plant performs three operations—operations on matter.

These are *The Three "M's"*, namely: *Measurement, Modification, Movement.*

Measurement, the first "M", encompasses the quality and quantity control over a product or a process by the evaluation of dimension, weight, mass, composition, temperature and numerous other factors. Equipment used for "Measurement" can vary from a simple weight scale or foot-rule to complex mechanical or electronic instrumentation.

Modification, the second "M", encompasses changing the physical or chemical state or form of the gaseous, liquid or solid matter which constitutes the product. Modification, then, covers every step of the actual manufacturing process from raw material to packaged product.

Movement, the third "M", encompasses the horizontal or vertical transportation of matter from all sources of supply to the plant, within the plant and from the plant to branches, warehouses, dealers and distributors—and eventually to the ultimate consumer of the product at the point of consumption.

The three "M's" sum up all the direct activities of any company in almost any production cycle. I have, of course, neglected such activities as sales promotion, advertising, market research, accounting, purchasing, engineering and others. This isn't from a lack of appreciation of their importance but because they represent a class of problems not specifically included in what I've tried to define as "an operation on matter."

Of the three, only Measurement and Modification upgrade matter. Only Measurement and Modification give matter greater value after it leaves the plant than when it entered the plant. *Movement is*

MAGNESIUM

23

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What you
could do
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ALUMINUM

35

You hear older men saying, "Make it heavy! People think weight means strength."

Well... you can't kid the moderns.

Aluminum weighs 50% more than Magnesium. Anything that's lifted, pushed, or motivated-by-power sells better and performs better when it's made of Magnesium.

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Rolled Magnesium Plate and Sheet
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DECEMBER, 1954

at best a necessary evil to be avoided as much as possible.

It should be avoided because Movement is not of itself a productive operation.

But who has paid attention to Movement? Brute physical force is still being used for pushing and pulling, lifting and setting down, bringing in and taking out.

Let's look more closely at the general problem of Movement. If you'll recall some of your high school physics, you'll remember the concepts of work and energy. Heat energy is measured in B.T.U.'s, electrical energy is measured in joules and mechanical energy in foot-pounds. Work or energy is defined in physics as the product of force and distance—hence the term foot-pound. In everyday terms

(Continued on page 134)

Caster Group Elects New Officers



Kenneth F. Heath (left), newly-elected president of the Caster & Floor Truck Manufacturers Association, receives the gavel from James S. Hanson, retiring president. Other officers elected by the group at the Fall meeting include D. B. Anderson, vice president, and O. T. Henkle, Jr., treasurer. Directors are J. S. Hanson, H. A. Ford and J. W. Hutchison.

Credit Due

A feature article in FLOW for this past September—titled, "Order Picking System Provides One-Day Wholesale Service"—described a highly mechanized operation which recently was activated at Philadelphia Wholesale Drug Co. Inadvertently, no mention was made of the fact that planning, layout and engineering—as well as initial survey and studies—were handled by Ross & Company of New York, N. Y.

PUSH—

PUSH—

YOU PAY THEM TO

PUSH

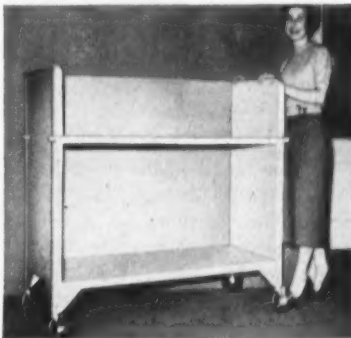
So—what a smart money-saving idea for you when they push THE LIGHTEST of METALS—

MAGNESIUM

Brooks & Perkins of Detroit—pioneer Magnesium fabricators with a Magnesium mill that rolls plate and sheet—has developed the

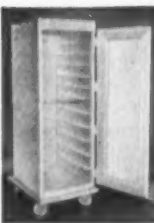
MINIMAX
Pusharound

made of Magnesium sheet, plate, and extrusions—unbelievably light in weight. They save worker fatigue, time, awkwardness and accidents.



Push shelf merchandise

Push factory scrap or trash



Push and load-into-trucks baked goods or candy

What do your people push that might be pushed easier and much more economically? Write or phone B&P for pictures, design, and price info. Tell us about your uses and present equipment, and let B&P engineers advise you about saving your Pushmoney with PUSHA-ROUNDS.

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Pioneer Magnesium Fabricators

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in useful literature

These publications, written by experts, are available. Indicate your choice on the self-mailing Readers Service Card.

Ten-Ton Truck Crane:

A new bulletin from Harnischfeger Corp. includes data on applications, details and illustrations covering the 105 TC Truck Crane. This is 10-ton capacity equipment, available only on its own carrier, which is easily converted to all other services—as in handling buckets and swinging a 39-inch magnet.

Circle 229 on Reader Service Card

Steel Storage Equipment:

New items added to the firm's line of steel shelving, cabinets and bins are included in a 16-page catalog, H4, offered by Bernard Franklin Co., Inc. Included is detailed information on applications, constructions and specifications.

Circle 230 on Reader Service Card

Automatic Industrial Doors:

Just published by Clark Door Co., and available on request, is a booklet detailing automatic, electrically operated doors which are furnished in completely packaged units. Applications which expedite plant traffic and improve temperature and humidity control are described.

Circle 231 on Reader Service Card

Handling By Hoist:

A fact folder gives precise descriptions, illustrations and references to further information covering six different types of hoists in capacities from 170 pounds to 60 tons. It is provided by The Harrington Company.

Circle 232 on Reader Service Card

Hydraulic Die Handling Trucks:

In Bulletin No. 10, engineering specifications are given along with descriptions and photos of a new line of die handling trucks by Elwell-Parker Electric Co. Capacities range from 10,000 to 100,000 lbs. Hydraulic lift and die-pulling mechanism are said to supply the most common needs of stamping and forging plants, with high speed changing a principal accomplishment.

Circle 233 on Reader Service Card

Truck Leveler:

A 40,000 lb. capacity, electric-hydraulic, adjustable ramp for lifting or lowering highway trucks—while loading or unloading—is the subject of a catalog and specification sheet offered by Rowe Methods, Inc. The equipment is intended to be installed in front of a loading dock to adjust the level of the carrier bed to that of the dock by push-button control.

Circle 234 on Reader Service Card

Fiberglass Containers:

Properties, advantages, styles and applications of fiberglass containers are given in a booklet offered by Fiberglass Box Co., Inc.

Circle 235 on Reader Service Card

Experiences with Batteries:

Offered to inform prospective users of industrial batteries of others' experiences, "On-the-Job Fact Sheets" of The Edison Storage Battery Div. of Thomas A.

Edison, Inc. cover a wide range of industries, include details on operation in extreme temperatures, battery life, dependability, maintenance, and resistance to damage.

Circle 236 on Reader Service Card

Exhaust Fume Eliminator:

How carbon monoxide and other combustion by-products are oxidized before they reach the air is described in a folder published by Oxy-Catalyst, Inc., producers of the OCM Catalytic Exhausts for internal combustion engines. Information covers various types of plant equipment powered by engines burning diesel, LP-Gas or non-leaded gasoline.

Circle 237 on Reader Service Card

Straddle Truck For Bales:

An application of the Ross Series 70 Carrier in the cotton industry is described in the September issue of Clark Equipment News. The equipment carries loads 2½ miles to the dock, 15 bales to a load, and performs other tasks which are described in detail.

Circle 238 on Reader Service Card

Applications for Hydraulic Crane:

A copiously illustrated data folder shows applications of the Austin-Western Hydraulic Crane (tire-mounted, self propelled) in a wide variety of jobs. Design features and operating specifications are listed.

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COMPARE MOTO-TRUC

for...

★ MANEUVERABILITY

★ TRULY FUNCTIONAL DESIGN

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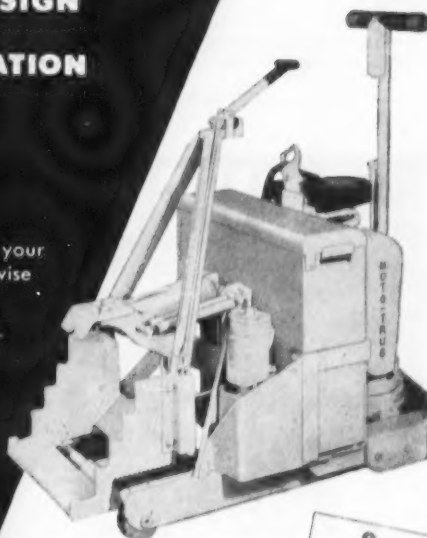
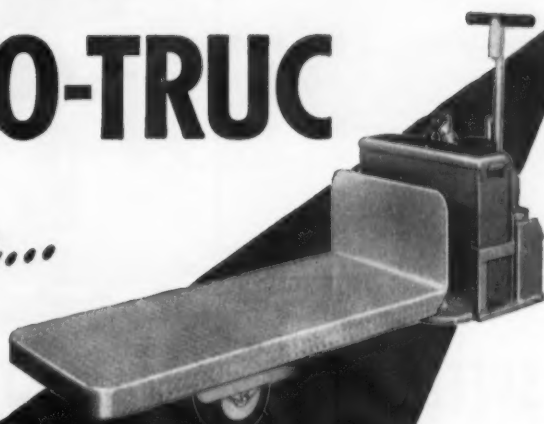
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Only through diligent comparison can your choice of materials handling trucks be a wise and economical one.

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DECEMBER, 1954

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varying slow speed adequate for precision handling. In the clear, the hoist can be operated at full, high speed. Ask us for further information on Detroit, 2 Speed Hoists.



The New Detroit Trojan Monorail Tractor for easy attachment to existing hand traveled hoists. Ask for Bulletin 833.

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Circle No. 19 on Reader Service Card

Engineering Data on Controls:

General Bulletin 19-F made available by W. C. Dillon & Co. illustrates and provides specifications on each model of the firm's line of instruments and accessories for production and material control. Sufficient details have been included to allow engineering and production personnel to specify from this information.

Circle 240 on Reader Service Card

Monorail Tractor:

Practically any hoist, light overhead crane or other hand-powered traveling equipment can be converted to an electric power traveled unit by attachment of the Trojan Monorail Tractor—as explained in Bulletin 833 produced by Detroit Hoist and Machine Co.

Circle 241 on Reader Service Card

Steel Stacker:

Vertical storage of steel is made easy by a rotating rack, as described in Bulletin R-120 from H. L. Bushman Co. Protection of material and conservation of space are two of the advantages pointed out.

Circle 242 on Reader Service Card

Inexpensive Plant Layout:

A brochure titled, "The ABC of the Repro-Templet Method of Plant Layout", provides sample materials, at no charge, to show how the system works. Materials include adhesive-backed, scale-size, opaque templates and a 1/4-inch scale grid sheet. Reproductions can be made directly by any standard printing method.

Circle 243 on Reader Service Card

Conversion to LP-Gas:

A number of booklets and data sheets available from the Parkdale Co. offers concise details on equipment for the conversion, through Beam equipment, of gasoline burning engines to use LP-Gas. Advantages of the liquid petroleum fuel are also covered.

Circle 244 on Reader Service Card

Paving the way for the new tax laws on depreciation, a House Ways and Means Committee report (HR No. 1337) stated, "The average machine . . . actually depreciates considerably more and contributes more to income in its early years of use than it does in the years immediately preceding its retirement."

"PAYD"* PLAN

gears new equipment payments to fast depreciation

*** "PAY-AS-YOU-DEPRECIATE"**, C.I.T.'s new plan, is based on the fast, more realistic depreciation schedules allowed by the new tax law. It offers you the best purchase plan for buying and depreciating new equipment.

"PAYD" helps you buy new machine tools, construction equipment and other profit-making, cost-cutting machines. Now 70% of the depreciation can be taken in the first half of the life of your new asset. And your "PAYD" installment payments are *geared directly to your new, fast depreciation allowance schedules.*

"PAYD" gives you new long terms

The "PAYD" Plan extends the time of financing on many kinds of equipment. Often the terms will match the entire useful life of the equipment. Terms are now ten years on machine tools and six years on construction equipment.

"PAYD" finance charge

The finance charge is 4.25% for each year of the term computed on the original unpaid balance.

"PAYD" opens the way for sound expansion

C.I.T.'s new "PAYD" Plan is the ideal method for buying needed new tools or equipment to expand—or beat competition. You retain your operating capital and acquire new profit-making equipment on a sound basis.

Consult with financing specialists

The "PAYD" Plan is a logical extension of the financing service C.I.T. Corporation has been giving industry for 46 years. Let one of our representatives put this experience to work for you. Write or call.

C. I. T. CORPORATION

The Wholly-owned Industrial Financing Subsidiary of C. I. T. Financial Corporation
Capital and Surplus over \$195,000,000

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Memphis 5-6795

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Randolph 6-8580

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Murray Hill 3-6400

Cleveland
750 Leader Building
Main 1-4824

Philadelphia
1530 Chestnut Street
Rittenhouse 6-8180

Houston
1100 E. Holcombe Blvd.
Lynchburg 3921

Portland, Ore.
Equitable Building
Capitol 9721

Los Angeles
416 W. 8th Street
Michigan 9873

San Francisco
660 Market Street
Yukon 6-5454

Circle No. 61 on Reader Service Card for more information

Hydraulic Hook Scale:

In Bulletin M-25, Martin-Decker Corp. provides details on feature, operational and application information on the SU-20 Sensor, described as a friction-free, hydraulic hook scale, which comes in capacities to 20,000 lbs.

Circle 245 on Reader Service Card

Details on New Hoist:

A six-page folder just released by R. G. LeTourneau, Inc., fully illustrates and describes a new line of electric hoists. Capacities of from four to 15 tons are included. A large, cutaway, multi-colored drawing, shows engineering details. Application pictures and further descriptions cover the line.

Circle 246 on Reader Service Card

Ten Ways to Cut Costs:

An eight-page brochure produced by Jervis B. Webb Co. describes how the Junior light weight Trolley Conveyor can cut production costs ten ways. Made specifically for this equipment is a new

2 $\frac{3}{8}$ inch I-beam track. Capacity with single roll ball bearing trolleys is 75 pounds; double roll, 100 pounds.

Circle 247 on Reader Service Card

Profits You Can See:

Brown-Line Corporation has published a brochure describing two features of interest to the trucking industry—use of the Brown-Line "Damage Control System" and "Second Deck", claimed to increase loads by as much as 20 percent.

Circle 248 on Reader Service Card

Pneumatic Handling of Bulk:

A fully illustrated, 16-page booklet has been designed to show advantages of handling dry, pulverized materials by a pneumatic system. Called, "How to Pull Dollars Out of Thin Air", the bulletin lists 86 materials and shows systems best adapted to handle them. It is offered by the Fuller Company.

Circle 249 on Reader Service Card

Automatic Conveyor

Lubrication:

Two new systems for lubricating conveyors constantly and automatically are covered in a revised, six-page booklet produced by J. N. Fauver Co., Inc. Identified as Catalog CY849, it includes a supplement covering the 700 series, in which there is one model to lubricate one side of a conveyor only, another to lubricate both sides of a monorail system.

Circle 250 on Reader Service Card

Easy Rolling Equipment:

Castered hand trucks of many shapes and for many purposes are described and illustrated in a new catalog issued by Rol-Away Truck Mfg. Co. Inc. There is a truck, shelf arrangement, or ladder for virtually every handling and picking job—some quite unusual, all designed for maximum ease of handling. Construction is of aluminum or plywood. Locking devices prevent slipping.

Circle 251 on Reader Service Card

**Pack, Inspect
and Assemble**

**with
ISLAND
UNITIZED
CONVEYOR
TABLES**



**SPEEDS UP
PRODUCTION**

An all-purpose portable belt conveyor, work table and straight-line production system, with and without side leaves. Available up to 100 ft. long in 10 ft. easily assembled sections.

PORTABLE OR STATIONARY

The perfect mechanized table for assembly, inspection and packaging operations. Available in steel or stainless steel with fixed or variable speed.

FREE!

**ISLAND EQUIPMENT CORP.
27-01 Bridge Plaza North
Long Island City 1, N. Y.**

Please send Bulletin 1P-1 on
Island Unitized Conveyor Tables. Dept. F-12

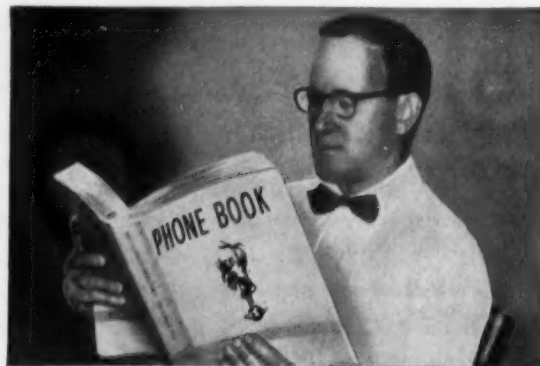
NAME _____

ADDRESS _____

CITY _____

STATE _____

Circle No. 116 on Reader Service Card for more information
102



One minute with your phone book can

When you have a materials handling problem call your Nutting Sales Engineer. He has the answer in the most complete line of Floor Trucks in America. He's backed by 63 years of materials handling know-how and a range of 1000 models and sizes. You'll get perfect adaptability for the job, easier handling, longer life and minimum maintenance.

NUTTING HAND & FLOOR TRUCKS

Trucks for all material handling requirements. Over 1,000 Standard and Special Designs—Platform, Stake, Rack, Box, Shelf, 2-Wheel Rubber Tired Wheels, Casters.



"WHERE TO BUY THEM"

NUTTING TRUCK AND CASTER CO.
1608 Division Street, Faribault, Minn.

Export Sales Rep.: Scheel International, Inc. 4237 No. Lincoln Ave., Chicago 18, Ill.
Circle No. 160 on Reader Service Card for more information

**SPEED
HANDLING
IN YOUR
PLANT**

Look up your Nutting Sales Engineer under "Casters" or "Trucks" in your classified directory, or write direct.

Nutting
Since 1891

FLOW

Do You Have Safety Problems in Your Business?

*Here's the
Answer!*

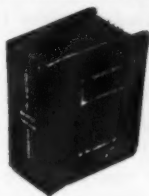


If you employ people, you *have* safety problems. And they can be mighty expensive ones. Injuries and illnesses cost you money two ways: 1) work-sustained disabilities are compensated for, according to your state law, out of your pocket; 2) absence from the job costs even more in lost production, training replacements.

Safety can cut your costs—no matter what business you're in, regardless how many people you employ. And here's your guide to dollar savings through accident-prevention. Its 10 separate sections cover every phase of industrial safety and health, from Aluminum dust hazards to Zirconium's toxic properties.

It will tell you what the dangers are and how to eliminate them from your operations.

The Industrial Safety & Health Handbook is bound in a heavy-duty binder—and it has to be. It's made for continual, rough use; you'll soon find it the most valuable book on your desk. Its nearly 300 pages are indexed and color-tabbed for fast reference. You can get an immediate answer to any safety or health problem that arises. If you have no safety engineer, you'll need this book more than ever.



The Handbook is an authentic reference for fundamental facts on all phases of industrial safety. Indexed for quick reference.

The Handbook gives you an immediate answer to any hazard elimination. It gives you fast non-technical information on hundreds of safety and health threats—and tells how to prevent them.

The Handbook is a compendium of all phases of safety education, written in non-technical language. Valuable source material for seasoned safety men, ideal background for men new to safety work.

This Handbook, published by Industrial Book Co., has been written and prepared by its affiliate, Occupational Hazards, Inc.

INDUSTRIAL BOOK CO.
1240-F Ontario St.
Cleveland 13, Ohio

Gentlemen:

Please send me _____ copies of the new Industrial Safety & Health Handbook at the price of \$25 per copy.

(Check or money order enclosed _____ Bill me _____)

Name _____

Title _____

Company _____

Street _____

City _____ Zone _____ State _____

More About Pulleys:

Reeves Pulley Company has released a new multi-color catalog which describes completely the new design of its fractional horsepower Vari-Speed Motordrive. Circle 252 on Reader Service Card

Lightweight Hydraulic Truck:

A circular describing the new Lewis-Shepard Company lightweight hydraulic pallet truck for

use with single and double face pallets, and skid platforms, is off the press. Details of construction, engineering highlights and installation photographs, as well as complete specifications of the 2000 pound capacity hand truck, are included in the four page circular. Circle 253 on Reader Service Card

Automatic Counting:

A color-illustrated brochure showing the FMC Record Counter

has been produced for the trade by the Packing Equipment Division of Food Machinery and Chemical Corporation. The new bulletin shows the many jobs that can be performed by automatic electric counters.

Circle 254 on Reader Service Card

Shock Absorber:

Details of construction, operation and application are given in Bulletin 1100 covering the hydro-pneumatic accumulator of Greer Hydraulics, Inc. This is described as an easily installed accessory designed to cushion shock and vibration on loads handled by fork trucks.

Circle 255 on Reader Service Card

Portable Loading Dock:

A bulletin describing the new Raymond Portable Loading Dock is available from The Raymond Corporation. The unit permits loading or unloading of motor trucks from ground level.

Circle 256 on Reader Service Card

Vibrating Conveyor:

A 230-page catalog on its line of vibrating conveyors has been published by The Jeffrey Manufacturing Company. The catalog covers feeders, conveyors, coolers, dryers, mixers, controls and magnetic separators, among other items of interest.

Circle 257 on Reader Service Card

Carbon Black Proportioning:

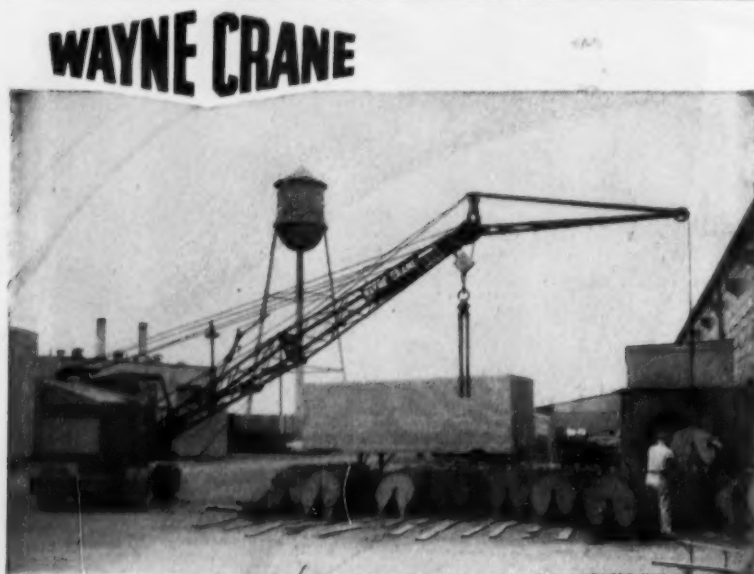
A remote-controlled system for proportioning carbon blacks in rubber compounding operations is described and illustrated in a new technical reference offered by Richardson Scale Company.

Circle 258 on Reader Service Card

Bulk Handling:

Various types of equipment and structures for handling coal, ore and other bulk materials are described in a 32-page illustrated booklet published by Dravo Corporation.

Circle 259 on Reader Service Card



... first choice with industry for materials handling because it has

Full 10-ton Lift!

... on 7' 8" wheel base for maximum maneuverability. Designed for industrial yard operations—self-propelled with four-wheel drive—one-man operation—single engine powered!

Wayne Crane pioneered the wheel-mounted industrial yard crane . . . and still continues to be the leading supplier to all types of industry.

Before you buy—compare—you'll see why you can't beat the performance of a Wayne Crane!



Also available: 8-ton Model 66
12 1/2-ton Model 40

FREE—Write today for a copy of the new "Handbook of Data for the Proper Selection of Industrial Yard Cranes."

WAYNE CRANE DIVISION

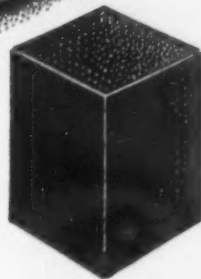
AMERICAN STEEL DREDGE CO. INC. • FORT WAYNE 1, INDIANA

Circle No. 206 on Reader Service Card for more information

PACKAGING AND SHIPPING SECTION

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An Easy Index to This Month's Advertisers

Are you looking for a particular type of packaging and shipping equipment? Listed below are advertisers according to type of product they are advertising in this issue. We have attempted to make your job a little easier by listing them as often as possible. To use this index, find the type

of product in which you are interested . . . turn to the advertisers listed under that product . . . circle the correct numbers on the reader service card, mail it, and you'll get complete information in a jiffy.

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GAIR can help

MEET YOUR DEADLINES



With assured delivery service

It's not hard to get a promise of shipping container delivery. But often there are a number of "ifs" in that promise. "Ifs" that don't exist at Gair.

"If our supply of raw materials permits, we'll be able to deliver on schedule" is one of the "ifs" you won't find at Gair. Our raw materials are grown in our own forests, processed in our own plants. We don't run short.

"If our manufacturing schedule holds up" is another qualification you won't hear from Gair.

We have *eleven plants*, equipped to fabricate whatever quantities and types of corrugated or solid fibre shipping containers you need:

"If local transportation facilities stay on schedule" is a third worry you don't have with Gair. Gair trucks provide a neighborhood service from strategically located plants.

Check your nearest Gair plant for the complete story on Gair-designed shipping containers to meet your specific needs.

SC.4.2

GAIR CONTAINER PLANTS

Cambridge, Mass. • Cleveland, Ohio • Holyoke, Mass. • Los Angeles, Cal. • Martinsville, Va. • No. Tonawanda, N.Y. • Philadelphia, Pa. • Portland, Conn. • Richmond, Va. • Syracuse, N.Y. • Teterboro, N.J.

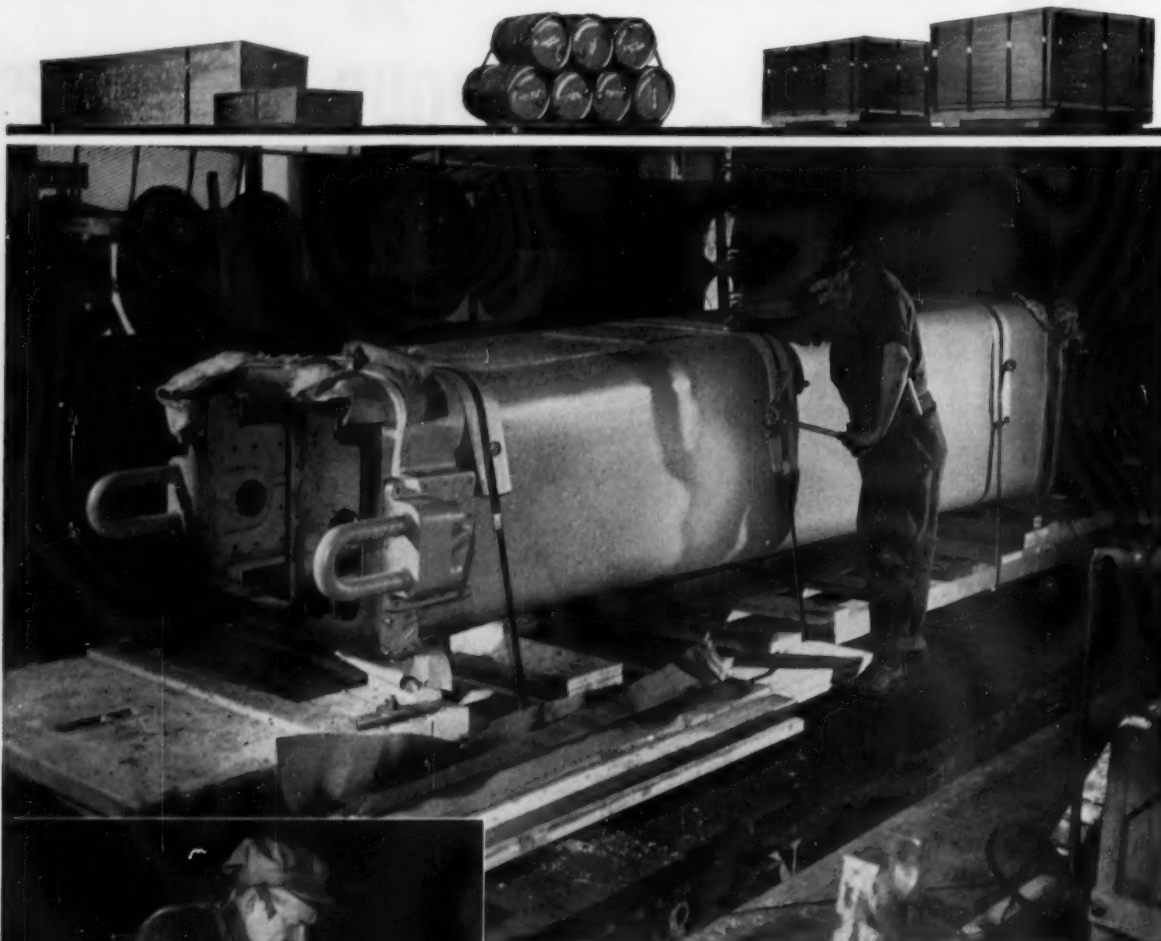


GAIR

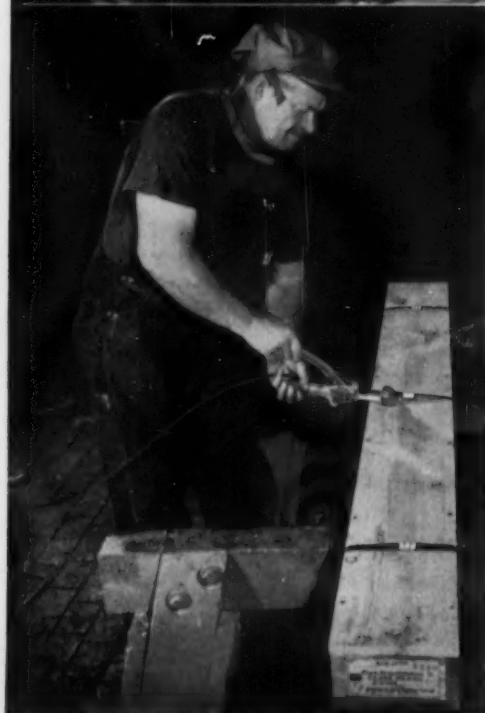
SHIPPING CONTAINERS
FOLDING CARTONS
PAPERBOARD

ROBERT GAIR COMPANY, INC. • 155 EAST 44TH STREET • NEW YORK 17
Circle No. 91 on Reader Service Card for more information

THE SHAPE OF THINGS TO GO



ABOVE: At the Giddings & Lewis Machine Tool Co., Fond du Lac, Wisconsin, Stanley Car Band and the Stanley GN Tightener team up to strap this giant unit assembly securely to skids for safe shipment to destination.

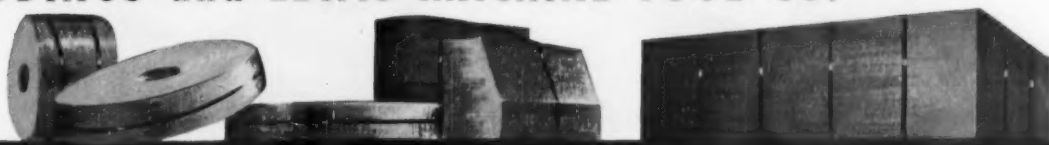


LEFT: Now, up for packing comes a product for different in size, shape and weight. And there's a Stanley Tool just right for the job. Using the RS Tightener, the operator applies Stanley Steel Strapping easily and speedily.

RIGHT: The same Stanley Tool performs just as effectively to bind, securely, a much smaller box. Also getting into the packing picture is a Stanley precision built sealer.



**PRESENTS NO PROBLEM AT THE
GIDDINGS and LEWIS MACHINE TOOL CO.**



STANLEY STEEL STRAPPING

**PACKS SMALL, *BIG* AND *Odd-shaped*
MACHINE PARTS FASTER and at LOWER COST**

Like this Stanley customer, you can effect "a decided savings in costs through the reduction of time spent in packing and the increased flow of materials."

Here, the problem was hard-to-pack products. If that's your problem, Stanley can provide steel strapping hand and power tools to pack *anything in any type of package* — box, crate, carton, bale, bundle, skid-load and pallet-load — easily, quickly, securely.

Or is your problem product damage? Products bound with Stanley Steel Strapping are *bound to be safe* during shipment by truck, train, plane or boat.

Is your problem the carrying out of management's order to cut costs? The Stanley Steel Strapping Specialist can show you how your present materials handling procedures can be modernized to attain maximum efficiency at minimum cost. If you have *any* packing or shipping problem, get it off your mind by putting it in Stanley hands. It'll become an ex-problem in a hurry!

Send For Free Folders — TODAY

Invite The Stanley Steel Strapping Specialist To Call — SOON

STANLEY

INSURE IT — SECURE IT WITH STANLEY STEEL STRAPPING

STEEL STRAPPING DIVISION

THE STANLEY WORKS



STANLEY STEEL STRAPPING DIVISION, 20212 LAKE STREET, NEW BRITAIN, CONNECTICUT

Telephone: BAldwin 9-2021

☐ Please send Folders, Forms B211 and 55-15.

☐ Please have Representative call.

NAME _____

POSITION _____

COMPANY _____

ADDRESS _____

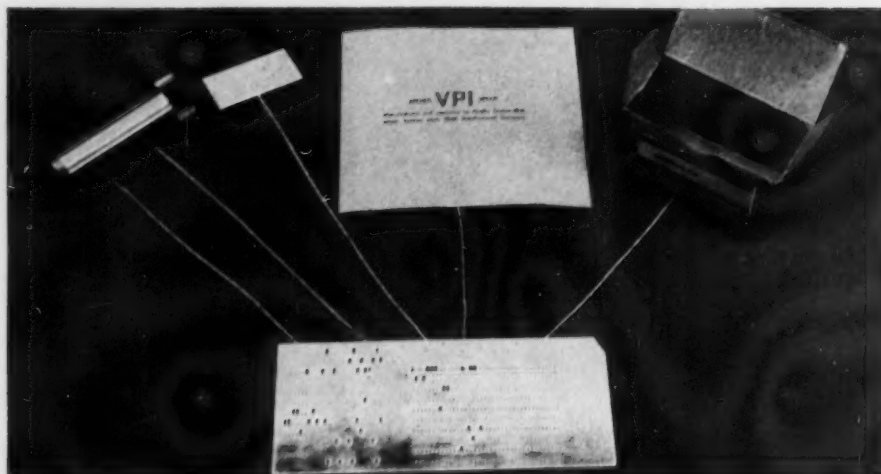
CITY _____ ZONE _____ STATE _____

STANLEY TOOLS • STANLEY HARDWARE • STANLEY ELECTRIC TOOLS • STANLEY STEEL STRAPPING • STANLEY STEEL

Circle No. 187 on Reader Service Card for more information

DECEMBER, 1954

109



PUNCH CARDS control pre-packaging and inventory of service parts at Yale & Towne Mfg. Co. This card is the process and packaging card and tells part number, part name, quantity required in each package, cleaning and preservation steps which are required prior to packaging, wrapping materials which must be used, type and size of container and the type of cushioning required, if any. Another punch card contains inventory information.



SERVICE PARTS DEPARTMENT has been established as a separate section at Yale. In the photograph above can be seen the department's parts storage area to the right and packaging for shipment area in foreground. Parts remain under the department's jurisdiction from the time they are received until they have been packaged and loaded on pallets for shipment.

PROCESSING AREA (left) includes tanks for various dips and rinses to remove rust, finger prints and other matter which might result in damage to machined parts. These steps are specified on the punch card which accompanies the parts from receiving to pre-packaging.



DRAWER FILE in receiving area contains two cards for each parts order issued by the service parts department. Clerk at left pulls inventory card and packaging card from file. Clerk at right makes up gummed labels for packages, using packaging card for his information.

Punch-Card Control of Pre-Packaging and Inventory

SPEED and efficiency in filling orders for replacement parts and reduced in-transit damage to material shipped have been the major benefits derived from a pre-packaging plan recently installed at Yale & Towne Mfg. Co. Success of the operation can be attributed largely to two factors: (1) the setting up of a separate department responsible solely for service parts; (2) a punch-card system which controls inventory and packaging of more than 21,000 replacement parts for hoists and industrial trucks which the company manufactures.

Separate Department Organized

Formerly, there was no specific service parts department and parts orders from the field were edited by a section of the general office force, then turned over to the production department. That department was primarily responsible for unit production, and furnishing replacement parts to the field was actually a secondary function.

As the company grew and unit production demands increased, the dual responsibility arrangement became

unsatisfactory. Service parts were drawn from general stores as were parts for unit production. Sometimes, to meet production requirements, it became necessary to give priority to requests for material to be used on new equipment and orders for replacement parts could not be filled as quickly as they should.

The first remedial step in the new program was the physical separation of service parts from unit parts. A service parts department was established to control its own inventory.

Paper work pertaining to service parts is now the responsibility of the new department too. Every order for parts is turned over to the service parts department's own office force upon receipt from the field. It is their baby from then until the order is filled and shipped. As a result of the separation of inventory and control functions pertaining to parts, the company is able to fill all regular parts orders within 48 hours and emergency orders within two hours after they are received.

Because replacement parts were previously drawn from unit stores under no predetermined plan, it was impossible to establish any standards for packaging

PUNCH CARD CONTROL

Continued

methods. Items were simply wrapped in paper or placed in some type of container, if it seemed necessary, and shipped.

Now, with service parts stocked as shelf-items, systematic pre-packaging is possible with most of the parts. Packaging standards have been established to provide for protection against moisture, shock, vibration and all the shipping and handling hazards which parts going to the field are liable to encounter.

Punch-Card Control

Behind the efficient inventory keeping and the systematic pre-packaging at Yale & Towne is a punch-card control system. It permits accurate maintenance of inventory of parts and the packaging materials they will need . . . it aids substantially in the achievement of speed in filling of orders . . . it spells out the pre-packaging procedure for every item on which a packaging standard has been established.

Tabulation on punch-cards of daily transactions for



DE-CODING KEY placed above packager's work table (arrow) makes it easy to interpret information on process and packaging card. This precision part is first wrapped in rust inhibiting paper, then it is placed in a metal-edge box and finally a pre-made label is affixed to it. Packaged parts are then sent to storage or are used to fill customer back-orders if necessary.

the service parts department is performed each night by a second shift. This procedure insures that a previous day's transactions have been properly recorded with the start of operations every morning, and results in rapid determination of proper inventory levels. To assure an adequate supply of parts on its shelves, the service parts department places orders on four-month requirements based on past and current usage.

Receiving Clerk Pulls Cards

When a quantity of a particular part is received the receiving clerk pulls two cards from a drawer file located in his department. The first is a pre-punched receiver card which is merely a duplicate of the original order placed by the service parts department with Yale's production or purchasing department.

After verifying the count in the incoming shipment, the receiving clerk sends the receiver card to inventory control where a check is made against possible customer back-orders. If any parts are owed to customers they must be set aside before any use may be made of the balance of incoming materials.

The entire shipment is then taken to a pre-packaging area. From there, items tabbed to fill back orders are sent to shipping. The remainder are sent to storage.



The second card which the receiving clerk removes from his file is a process and packaging card. It spells out, in code, the step-by-step cleaning and packaging procedures which have been established for the parts just received.

It also furnishes information for use in marking packages. Gummed labels which will be affixed to each package are made up ahead of time by the receiving clerk.

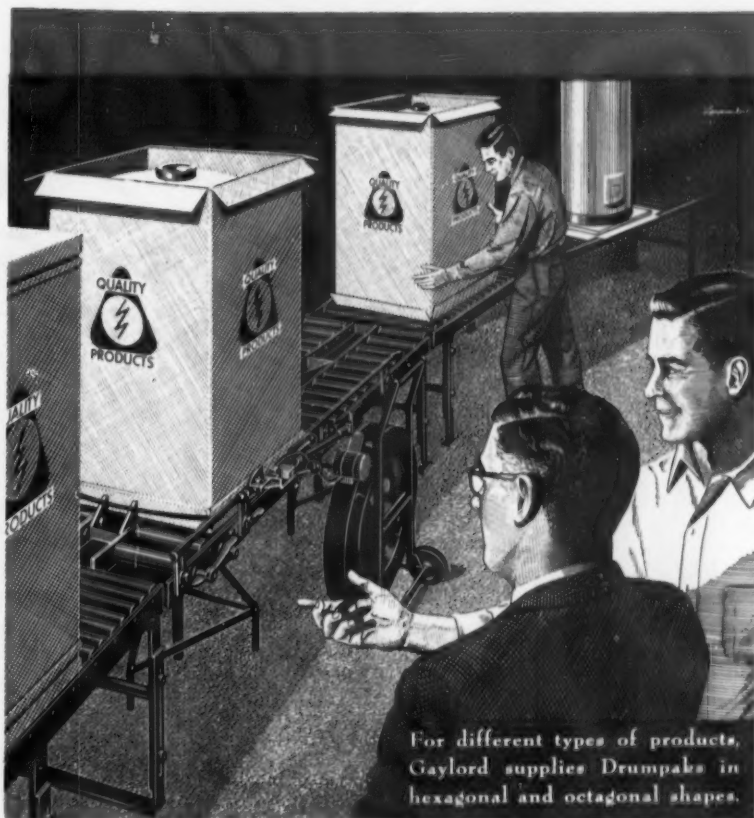
Labels are imprinted on machines which use perforated strips of pre-made labels supplied in large rolls. Complete labels and the process and packaging cards are then placed with the parts to accompany them to pre-packaging.

Systematic Pre-Packaging

Packagers have de-coding keys located over their work benches for interpretation of the coded cards. Using the cards as guides, packagers are certain that every item will be properly protected, packaged and identified.

As part of the pre-packaging procedure all parts are thoroughly cleaned by chemical processes. Machined surfaces are dipped to remove any possible rust, rinsed, dipped to remove finger prints, then wrapped in paper impregnated with a volatile corrosion inhibitor. Two types of papers are used by Yale—standard kraft in any of a number of different weights for items not requiring a great deal more than protection against moisture; and creped paper to add cushioning properties and to prevent scratching of parts with critical surfaces.

The size and type container to be used for each part is also specified by the punch-card. In the past when containers were needed, the carpenter shop hammered together a sturdy box. It usually provided all the protection which was needed, but was extremely costly. Studies have revealed that adequate protection could be provided without the excessive over-packaging through use of boxes and cartons of the metal corner stayed type for many parts. Box type and size are specified on the punch card. Now packaging is accomplished at lowest cost and packaged products are stored, handled and shipped safely with a minimum of weight.



For different types of products, Gaylord supplies Drumpaks in hexagonal and octagonal shapes.

Tough to pack it? DRUMPAK IT!



CORRUGATED AND
SOLID FIBRE BOXES • FOLDING CARTONS
KRAFT PAPER AND SPECIALTIES
KRAFT BAGS AND SACKS

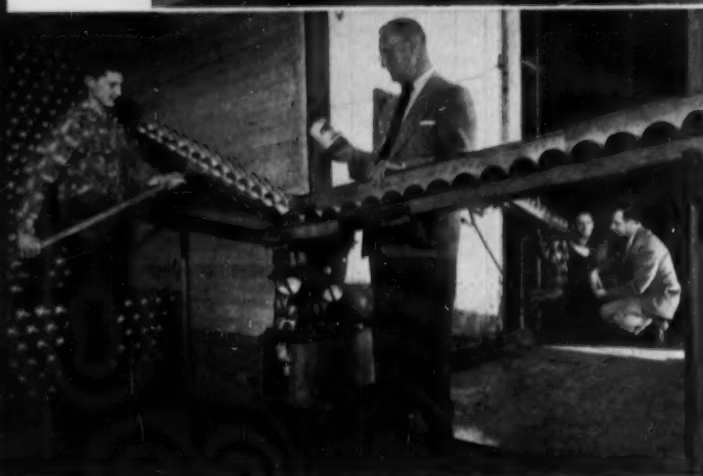
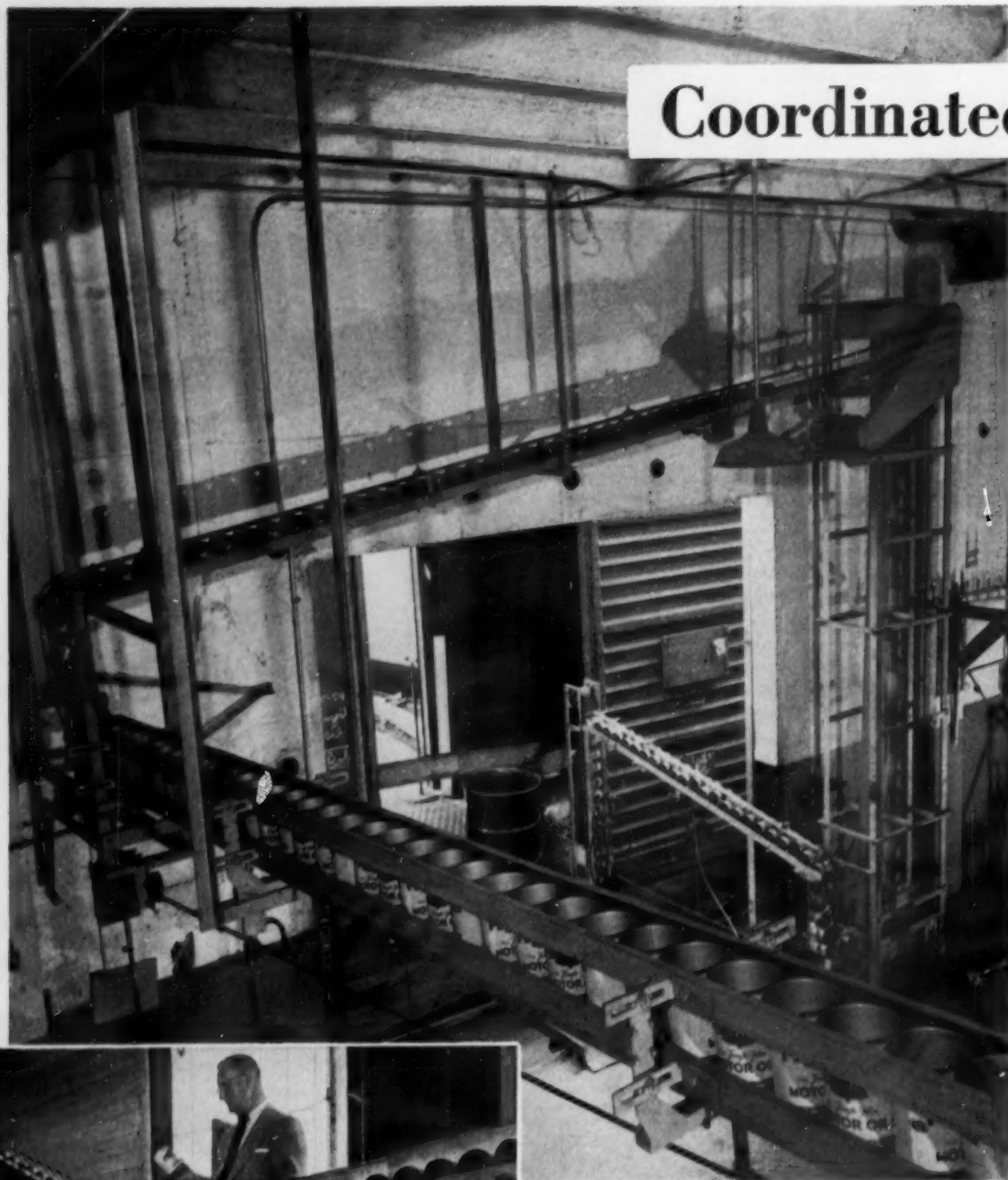
Because of its unusual adaptability in size and shape, a wide range of products are being profitably shipped in Drumpak. Water heaters, air conditioners, furnaces, forgings, carpets and bulk chemicals are just a few. The Gaylord-originated Drumpak design cuts packing costs, speeds product handling, gives greater protection and is easier for the customer to open.

You'd be interested in some of our Drumpak cost-saving case histories. Call your nearby Gaylord sales office.

GAYLORD CONTAINER CORPORATION • ST. LOUIS

SALES OFFICES FROM COAST TO COAST ★ CONSULT YOUR LOCAL PHONE BOOK
Circle No. 92 on Reader Service Card for more information

Coordinated



CAR UNLOADING UNITS (left) are expanding chutes which reach from doorway toward both ends of car. Empty cans are "raked" into chutes which converge into a single line. That line is boosted to a gravity unit that carries cans into building. CAN ELEVATOR near door of building (above) raises cans 10 feet to gravity feed which carries them over door to cable-driven unit and on to packaging at other end of the building.

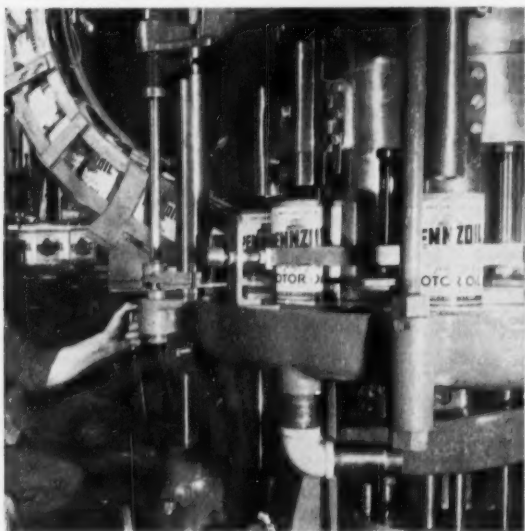
Flow--"Secret" of Success

...in Cannery Operations

Behind every good can conveying system is a story of careful planning to gear together the operations of every packaging machine.

SUCCESSFUL cannery operation under modern conditions requires that cans be moved fast and that they be moved with care. Often more than 500 cans per minute must be moved along without damaging flanges of empty cans and without scratching lithographed outer surfaces both before and after filling. The efficiency of the can conveyor system becomes quickly evident from production costs and from appearance of the finished product.

No two can conveyor systems are exactly alike as



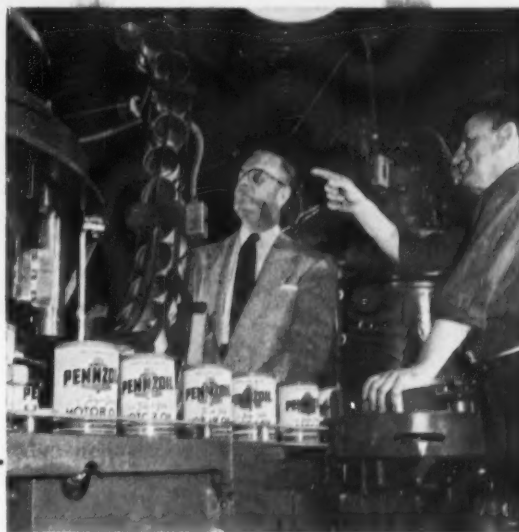
GRAVITY CHUTE (above) carries cans from end of cable-driven unit, which is 13 1/2-feet high; through series of twists where cans are turned upside down for cleaning; down to a nine-pocket filler machine. After cans have been filled, they move on a table top chain drive conveyor (right) to can closer and seamer. The two machines and conveying equipment leading to and from them are all coordinated with speed of system.

each canner has problems that are peculiar to his method and location of operation. Each conveyor system must be tailored to individual needs.

Compounding the problem of moving cans is the physical structure of most canning plants. A great number of today's canners were in business before high-speed can handling became an economic necessity. Any new conveyor systems which they install must be engineered to conform to the existing buildings. Floor space is generally fully occupied by packaging machines and material being packaged. Can conveyor systems of necessity, then, must often be installed overhead.

One company was faced with the following handling sequence when it started to plan a can conveying system: (1) Cans had to be moved from the ground to the sixth floor where they were stored; (2) They were moved to the fourth floor where they were filled, closed and labeled; (3) They were returned to the ground again for packaging and shipping.

To meet such problems engineers make use of elevators, belts, cables, gravity feeds, powered conveyor



sections, twists, drives and an almost unlimited variety of conveyor accessories to connect each station of a canning system.

Motor Oil Plant

One of the neatest conveyor systems to be found anywhere is at the Pennzoil Co., Los Angeles where motor oil is put into quart-size cans for sale at service stations. The can conveyor system actually projects outside the canning plant to pick up empty cans from box cars at an adjacent railroad siding. Each car carries 55,000 to 60,000 cans.

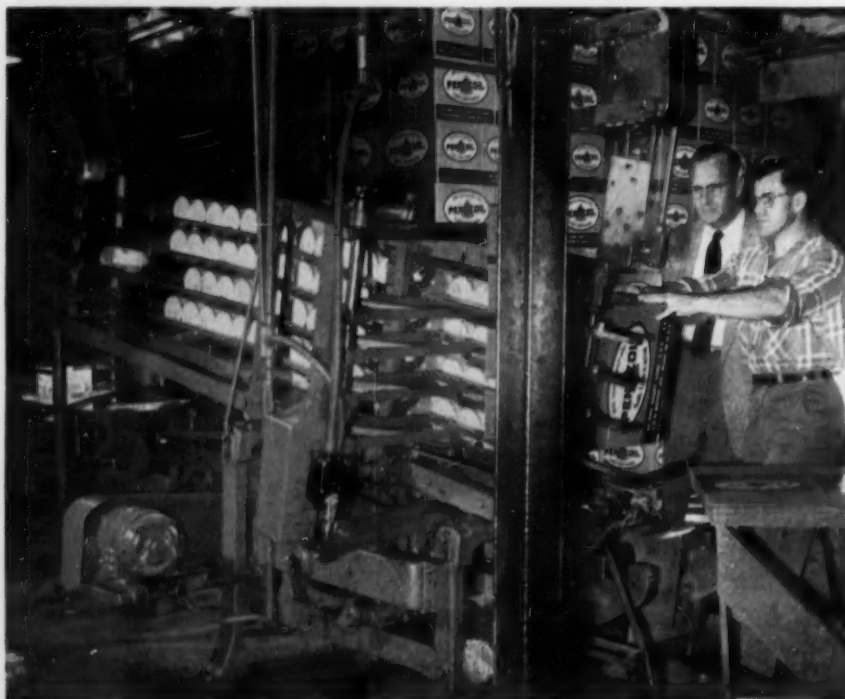
Gravity chutes, adjustable in length, serve as unloading units in a freight car. The chutes extend from the doorway toward each end of the car and cans are "raked" onto them from stacks. The cans roll toward the doorway where the two separate lines converge into a single line which is boosted to a height of five feet from which point gravity carries them into the building. Pitch of the gravity feed is two inches per foot.

Inside the door of the building the empty cans

make a right turn and are elevated 10 feet above the floor. The elevator consists of two parallel belts which squeeze cans between them for lifting. Another gravity conveyor carries them to a cable drive. A drop curve feeds the cans onto the conveyor cable which changes the direction 90 degrees to the left and conveys them to the end of the building opposite the entrance.

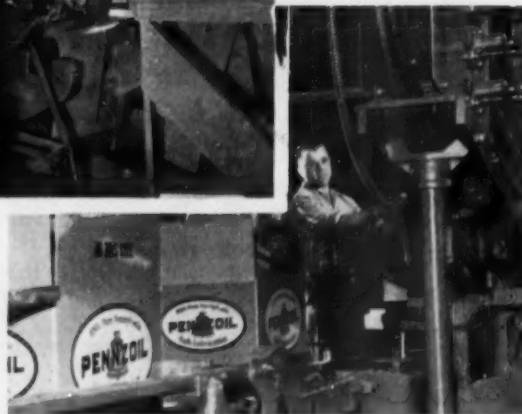
When the cable drive ends it is 13½ feet above the floor. A 90-degree twist places the cans on their sides to be conveyed by gravity into the filler. They roll approximately 10 feet and then enter a series of twists. The first twist turns the can upside down so a blast of air can clean out all dust. Another twist and a 32-degree turn places the empty can in position to drop into the nine-pocket filler.

The filler is synchronized with an adjoining can closer and a table top chain drive carries the filled cans from one machine to the other. After cans have been filled they are placed on their sides to be gravity fed into a booster which lifts them into the case packer, gluer and compression unit. Filled cases are then stored or taken to shipping.



CASER receives cans from four chutes and packs them two high in 4 x 4 pattern. Cans were turned on their sides immediately after sealing, then boosted to overhead conveyor which feeds unit that deposits them into chutes. After casing, shipping package rides on roller conveyor (right) to sealer which completes closure of top and bottom simultaneously. Sealer can be seen in background of photo above, beneath and beyond the unit which feeds the four chutes leading to the caser.

For information and photographs used in this article, FLOW'S thanks to: Five Point Engineering Corp., which designed and installed the system at Pennzoil; and Garret Supply Co., a division of The Garret Corp., which provided gears, bearings, pulleys, sprockets, chains and collars used in system.





STEEL STRAPPING

HERE is Brainard salesman Tom McMahon of Akron, Ohio, who demonstrated to this manufacturer of display shelves and counters that a combination of two methods—steel strapping and strapping tape—was the answer to faster and more efficient materials handling and shipping.

Masonite counters, which were formerly tied together, are now bundled faster and more securely with Brainard strapping tape. And each bundle weighs over 50 pounds! For banding larger and heavier shelving back panels, Tom McMahon recommended Brainard steel strapping for greater strength and security, providing each unit with maximum protection against damage in transit.

Brainard salesmen are factory trained in handling and shipping methods—are equipped to study your operations, make recommendations, then give your personnel on-the-job demonstrations. Why not write for a catalog—and an analysis of your packaging and handling operations. For information, write Brainard Steel Division, Dept. K-12, Griswold Street, Warren, Ohio.



STRAPPING TAPE

Photos Courtesy of Formacraft Manufacturing Co.



**COMPLETE STRAPPING SYSTEMS & MATERIALS •
WELDED STEEL TUBING • ELECTRO-GALVANIZED STRIP STEEL •
SCAFFOLDING • PALLET RACKS • BUILDING PRODUCTS**

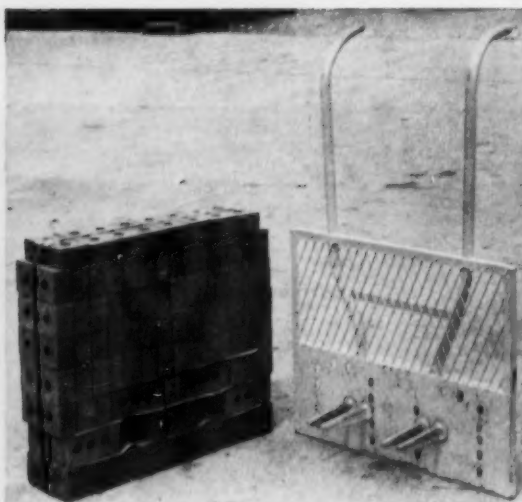
Offices in principal cities throughout the U. S.

Circle No. 39 on Reader Service Card for more information



Low-Cost Brick Package

... Unit load is easy to build and easy to handle.



HAND FORK TRUCK has numerous keyhole slots to make forks adjustable for use with bricks, concrete blocks or other similar material. Unit load contains 100 bricks and weighs about 440 pounds. One man can handle it anywhere on the job safely and easily.



TRAILER-LOAD is arranged with open area at rear of truck for maneuverability of the hand truck. Since unit loads are two courses higher than with loose loading, there is ample space to equalize weights on each axle.

MANUFACTURERS and users of bricks and concrete blocks will be interested in an efficient low cost packaging and handling method which has produced big savings for Streater Brick Co., Streater, Illinois.

The basic package, to which the method owes much of its success, is an 3 x 27 x 32-inch steel-strapped package containing 100 bricks and weighing approximately 440 pounds. It may be conveyORIZED, handled by power fork lift truck, or taken anywhere on the job by means of a specially designed hand truck.

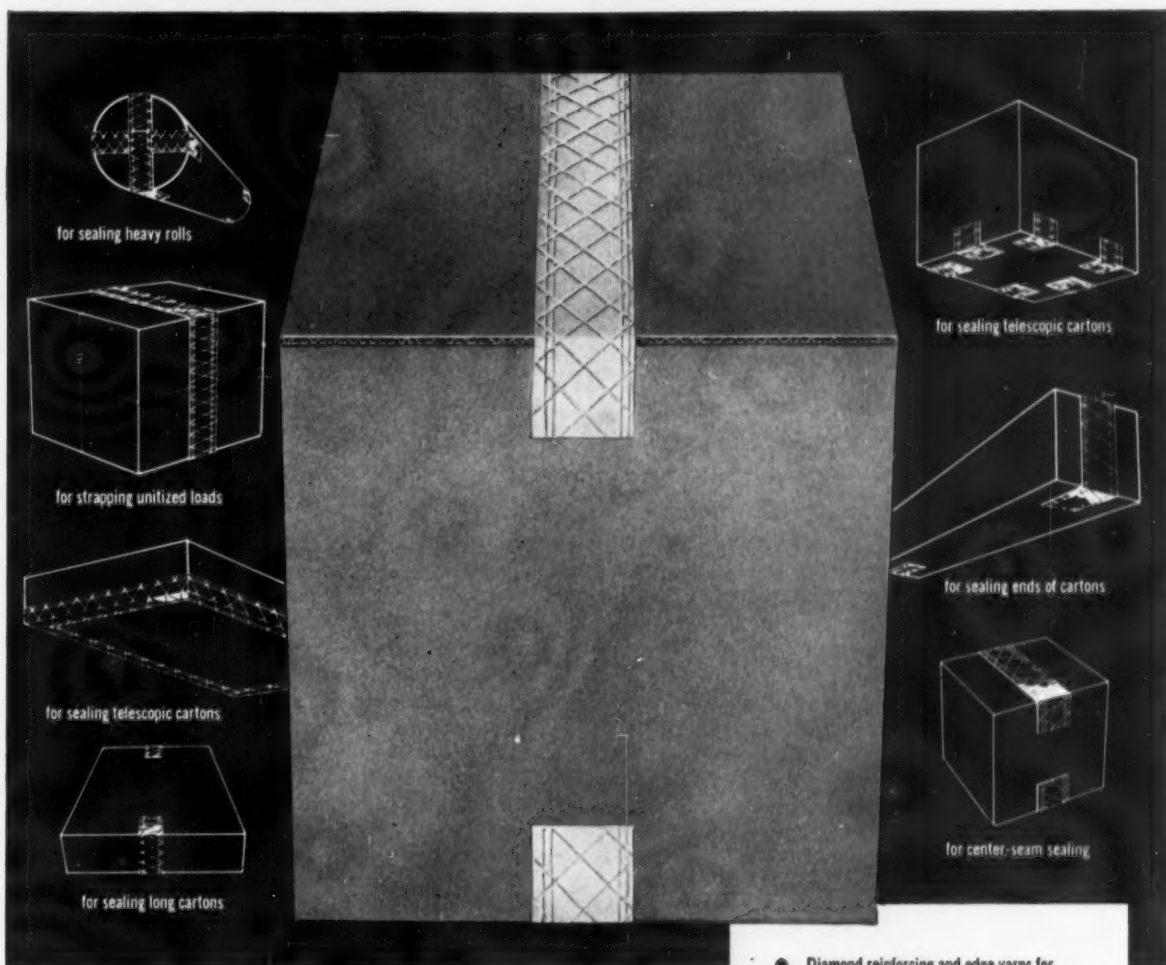
The package is assembled and strapped at the brick-making plant on an inexpensive jig. Three of these units can be handled at a time by a power truck having standard forks and one by the special hand truck on its adjustable forks.

At the site, the same hand truck is used for unloading. Loads are lowered to the ground either by means of a safety tread ramp or on a hydraulically operated tail gate. Still intact they can then be wheeled directly to the point of use.

Photos courtesy of the Flink Co.



SAFETY TREAD RAMP, which accompanied bricks on trailer, is used for unloading on the job. Trucks may also be equipped with power tail gates for fast, efficient unloading with the specially designed hand fork truck.



Seal Cartons Faster, Stronger with Angier Reinforced SNAKE TAPE!

Try tearing a piece of new diamond reinforced Snake Tape!

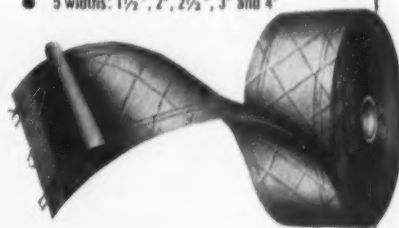
You'll discover extra, all-directional strength that seals cartons more securely — and with less tape!

Center seam sealing saves time and money because a little Snake Tape goes a long way. One sealing motion is required instead of three. And your cartons are sealed stronger . . . a fact *proven* by independent testing laboratories.

Only Snake Tape gives you this unique construction feature.

It is reinforced with the same resilient *rayon* yarns used in auto tires to absorb road shock. This means that Snake Tape closures withstand the shock of impact in shipping. No other tape offers this rayon reinforcing feature!

- Diamond reinforcing and edge yarns for all-directional strength
- Rayon reinforced to absorb shock
- Waterproof
- Best animal glue
- 5 widths: 1½", 2", 2½", 3" and 4"



FREE SAMPLE — Send for generous trial sample of reinforced Snake Tape and complete facts:

ANGIER CORPORATION
Framingham 13, Massachusetts



The pallet loader is neither intended nor recommended for every plant having a packaging operation. Here's a way to answer the question. . .

When Is an Automatic Pallet

by G. D. Beaver*

EVERY plant that produces a high-volume packaged output must have some means of transferring the product from the package sealing machine to the point of shipment or storage. In most plants having more than a minimal output, the individual cartons delivered from the sealing machine are stacked on pallets. By collecting a sizable number of cartons into a unit load on a single pallet, handling becomes more economical. Larger handling volume per trip is possible, storage and inventory are simplified and subsequent handling in shipment is made faster.

Until a few years ago even the most advanced material handling systems used manual labor to take cartons (as they left the sealing machine) and to stack them into predetermined patterns on pallets. Depending upon the production rate of the plant, a crew of from two to 10 men was needed to perform this one palletizing operation. Several years ago the automatic pallet loader was developed to fill the missing links in what were otherwise high automatic, high-speed, economical handling systems.

The pallet loader is what its name implies . . . It is an automatic machine that receives cartons from one or more sealing machines and stacks them on pallets according to a predetermined pattern. As each pallet is loaded it is automatically ejected from the machine and is replaced by an empty pallet. As long as the flow of cartons keeps coming and a supply of empty pal-

lets is maintained, the pallet loader will continue to operate without attention.

The advantages of the automatic pallet loader are substantial. First, it practically eliminates manual handling of cartons after they leave the packaging machine. In a plant having a 25-carton-per-minute output, the savings in manpower often exceed 200 man-hours per shift per week.

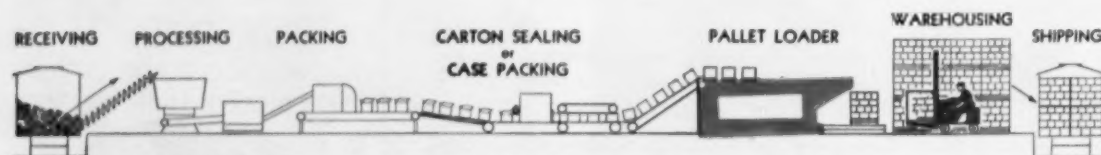
Second, the output of the loader is uniform in both quantity and quality. It can handle up to 30 cartons per minute, every minute, without fatigue or slowdown. Breakage of merchandise and damage to cartons are substantially less than with manual handling. Every pallet is stacked uniformly and the load is compact, stable and free from overhang. Consequently, each pallet requires minimum storage space and can be moved without snagging adjoining structures.

Third, by means of a system of collecting conveyors, the output of a number of packaging machines scattered throughout a plant can be palletized at a single point by a single loader. With proper controls a loader can handle the output of packaging equipment that is operating on a partial shift or at sporadic intervals and where a full-time loading crew would be expensive.

Is A Pallet Loader Justified in Every Plant?

Although the pallet loader is a highly efficient time

*G. D. Beaver, Manager Pallet Loader Division, Lamson Corp., Syracuse, N. Y.



PALLET LOADER FUNCTION in any production plant is to palletize the output of the packing and sealing machines. This makes for convenient and rapid handling in warehousing, on the shipping dock and in the vehicle.

It eliminates manual handling after cartons have left packaging machine, provides uniform output in both quantity and quality and is able to palletize the output of a number of packaging units throughout the plant.

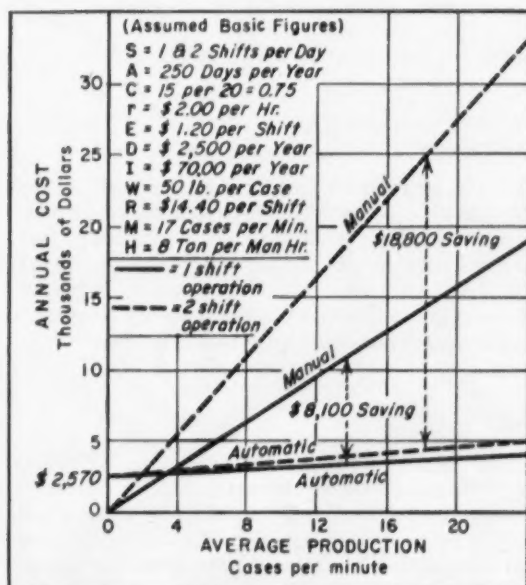
Loader Justified?

saving machine it is neither intended nor recommended for every plant having a packaging operation. It is a relatively expensive piece of equipment, costing about \$25,000, and may require an additional investment in collecting conveyors and automatic controls.

The ultimate justification for installing a pallet loader is not high efficiency, but whether the initial cost of the pallet loader system will be offset by worthwhile savings in plant operations.

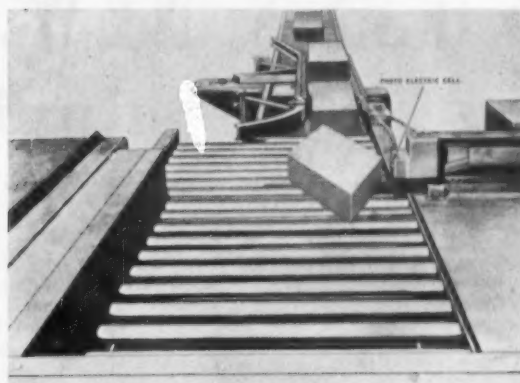
F. N. Landon of Sun Oil Co., one of the early users of pallet loaders, has developed an interesting cost analysis that bears closely on this question of economic

(Continued on page 126)

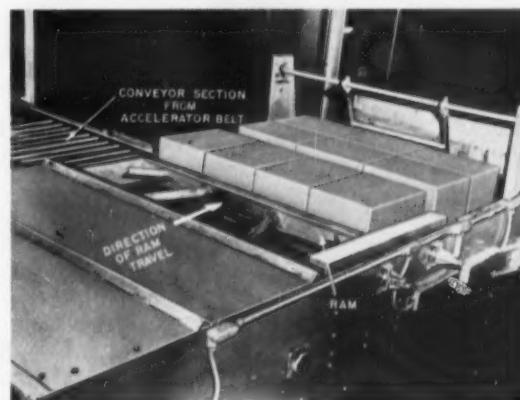


COMPARATIVE COSTS for hand and automatic palletizing on one and two-shift operations under given set of plant conditions. For other conditions, cost is computed by substituting for variables at upper left.

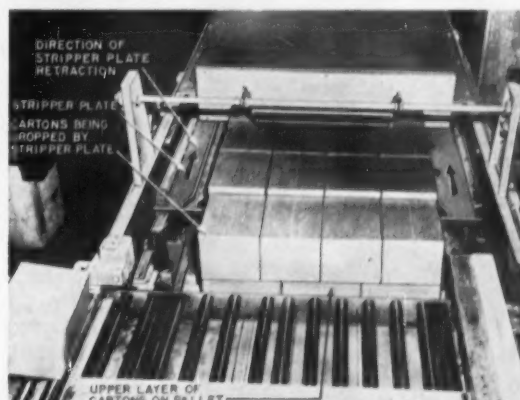
WHAT A PALLET LOADER DOES . . .



PHOTOELECTRIC CELL counts cartons as they enter pallet loader. It also actuates control mechanisms to place the cartons correctly for desired loading pattern.



RAM moves completed rows of cartons forward onto the supporting stripper plate of the pallet loader. This makes room for other cartons coming from packers.



STRIPPER PLATE retracts after each layer has been completed depositing it on the preceding layer or on the pallet. Up to 35 cartons of a single size and up to 30 of multiple sizes can be palletized in one minute.

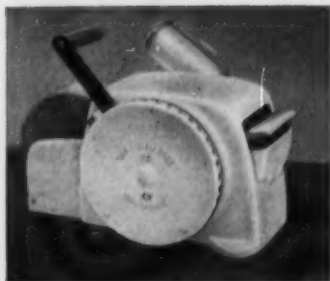
WHAT'S NEW... in Packaging and Shipping Equipment



Portable Power Stapler

With the Duo-Fast Air Plier of Fastener Corp. you are able to take your power stapler to the job instead of taking the job to the stapler. The tool weighs about three pounds and is trigger operated on 85 pounds air pressure. It is used for stitching certain types of cartons (such as telescopic cartons), stapling corrugated fillers, sealing heavy bags and for similar stapling jobs where it is desirable or more convenient to carry the stapler to the work.

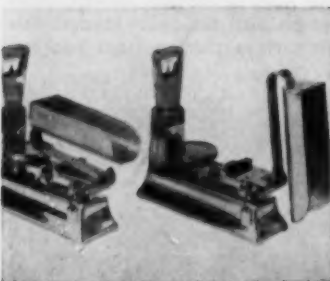
Write No. 274 on Reader Service Card for more information



General-Use Tape Machine

The Tape-Shooter 75 of Better Packages, Inc. is a general shipping room machine said to be superior because: (1) Two bristle brushes insure instant, thorough moistening; (2) One-piece chassis frame inside the housing carries complete feed and cutting mechanism for permanent alignment of all moving parts; (3) All moving parts are enclosed . . . knife and tape path are completely protected from dirt, glue and other foreign matter . . . and unit is easy cleaned.

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Vegetable Weigher-Packager

A newly designed scale, announced by the Exact Weight Scale Co., is model 213 which has a scoop for weigh-packaging of carrots. It is said to feature high accuracy combined with extremely fast weighment . . . made possible by the Exact Weight principle of dynamically balanced lever with short movement and an indicator which is designed to "exaggerate" over weights or under weights.

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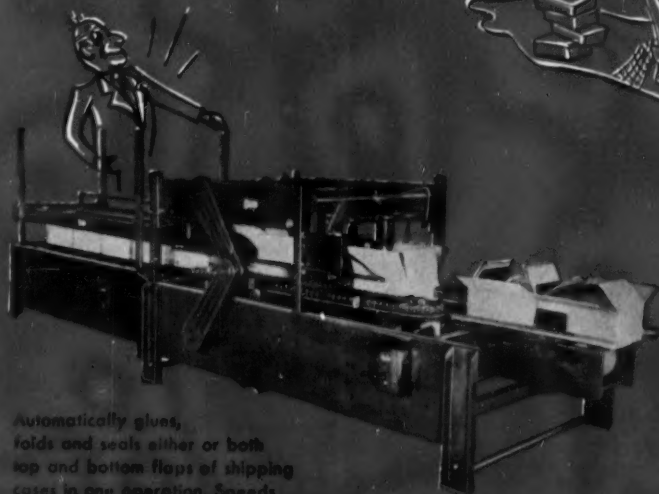
Oval Wire Strapping

A reinforcing medium said to combine the economies of round steel strapping wire with the physical characteristics of flat steel strapping has been developed by Renois Tying Machines, Inc. Oval wire strapping is made in a wide range of sizes covering most packaging or general strapping requirements. Machines for applying the wire are available from stock. The manufacturer calls attention to a "no waste" feature of "Step-Gripper" wire tensioning with unused wire being returned to its original coil after tensioning.

Write No. 277 on Reader Service Card for more information

(Continued on page 130)

LIVE [★] LONGER!



Automatically glues, folds and seals either or both top and bottom flaps of shipping cases in one operation. Speeds up to 60 cases per minute.



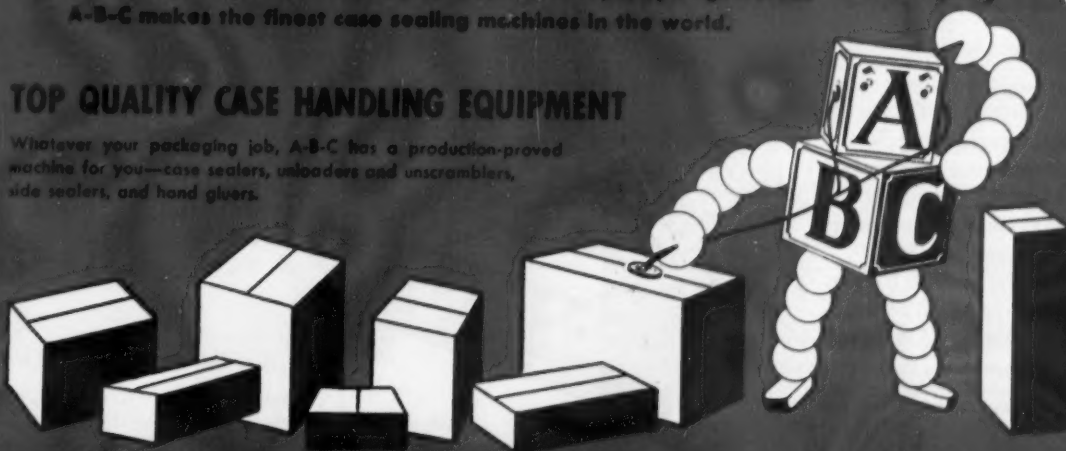
★ When you get Case Sealing Headaches—call in A-B-C, the world's foremost case sealing specialist. A-B-C has cured the case sealing headaches of leading firms in every industry. Let them help you without charge.

100 MODELS means that there is an A-B-C Case Sealer to meet your exact requirements...

A-B-C Automatic and Semi-automatic Case Sealers are made in 100 different models to handle almost any size or shape case fast, efficiently and economically. A-B-C Case Sealers are compact—require only 1/2 the space needed for old style equipment. They're precision-built and expertly engineered. A-B-C makes the finest case sealing machines in the world.

TOP QUALITY CASE HANDLING EQUIPMENT

Whatever your packaging job, A-B-C has a production-proved machine for you—case sealers, unloaders and unscramblers, side sealers, and hand gluers.



Write, Wire or Phone **A-B-C** PACKAGING MACHINE CORP.
QUINCY, ILLINOIS



**Strap it
with
Behr-cat**

...and cut shipping costs

BEHR-CAT filament-reinforced strapping tape is fast revolutionizing shipping room practice everywhere. It sticks at a touch without wetting. It's unbelievably strong — packages stand up under rough handling. Customers prefer it for ease of unwrapping. Try it.

Behr-Manning Corp., Troy, N. Y.

In Canada: Behr-Manning (Canada) Ltd., Brantford.
For Export: Norton Behr-Manning Overseas Inc.,
New Rochelle, N. Y., U. S. A.



BEHR-MANNING

division of NORTON Company

▲ COATED ABRASIVES
▲ SHARPENING STONES
▲ PRESSURE-SENSITIVE TAPES

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What's New ...

in Packaging & Shipping
Useful Literature

Suspended Bag Closers:

Sewing machines suspended from overhead mounting—with either top balance or counterweight—are described and pictured in Booklet No. 201 issued by Union Machine Co. Titled, "Suspended Head Bag Closing Machines", the bulletin is concerned with portable machines having built-in motor, finger-tip controls, automatic brake and chain cutter. They handle all weights of bags—textile or paper.

Write 278 on Reader Service Card

Strapped Shipments for Safety:

Applications of steel strapping to many types of shipments are illustrated and pictured in a data folder released by Signode Steel Strapping Co. Strapping tools and equipment are also described. The firm offers specific help on particular packaging and shipping problems.

Write 279 on Reader Service Card

Development of Package Design:

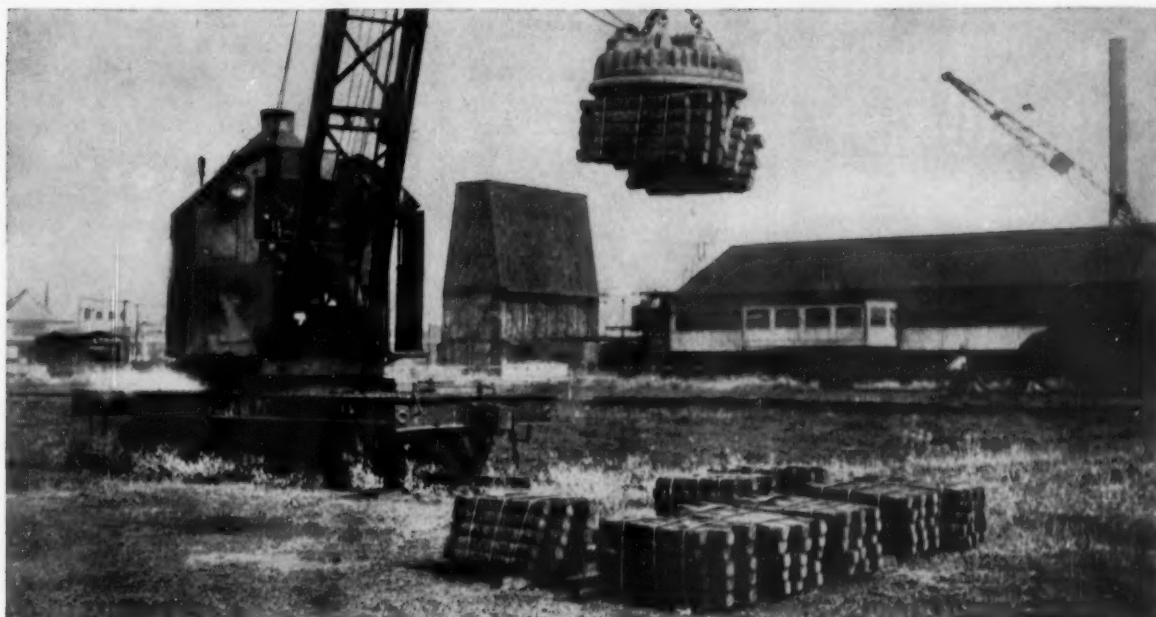
Just published by Hinde & Dauch is a booklet designed as a means of package evaluation and an idea source for users of corrugated packaging. It outlines a step-by-step procedure in the development of a package from blueprint to finished box. The 20-page treatise provides, among other valuable information, 60 "tricks of the trade".

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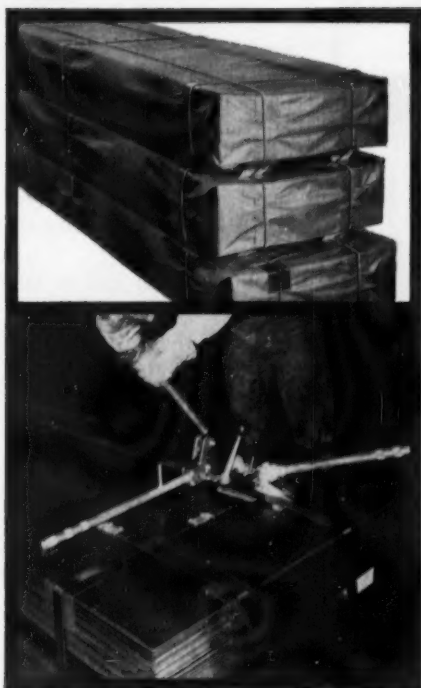
Full Line of Staple Tackers:

Pictures, sketches, data, specifications, and special features of an extensive line of automatic tackers, staples, and accessories are provided in a 22-page booklet issued by Fastener Corporation.

Write 281 on Reader Service Card



Here's how USS GERRARD Strapping saves you time and money



IT COSTS LESS—GERRARD Round Steel Strapping costs about 40% less than any other form of metal reinforcement. GERRARD Flat Steel Strapping is moderately priced, too.

REDUCES STRAPPING TIME—GERRARD Strapping ties any-shaped crate or bundle neatly and securely, turns corners smoothly. Both hand-operated and semi-automatic tying machines are easy to use, do their jobs quickly and efficiently.

REDUCES HANDLING TIME—Versatile GERRARD Strapping saves plenty in man hours since neatly palletized and unitized bundles of forgings, pipe, steel sheets, or machine parts can be handled easier and quicker—are easier and safer to stack. In many instances, handling time is reduced as much as 50%.

REQUIRES LESS INVENTORY—The headache and additional cost of frequent inventories is eliminated. You need never recount the units in a bundle once they've been packaged with GERRARD Strapping, whereas loose pieces need constant retallying every time they are moved.

SINGLE SOURCE BUYING—By making GERRARD your single source of supply for both Round and Flat Steel Strapping, you'll save time and simplify paper work, using one purchase order for your strapping. You'll save on freight charges, too, by combining shipments of Round and Flat Strapping in a single carrier.

If you'd like assistance from a GERRARD engineer in solving a tying problem efficiently and economically, get in touch with us. Our engineer's services won't cost you a cent.

GERRARD STEEL STRAPPING DIVISION, UNITED STATES STEEL CORPORATION
2937 West 47th St., Chicago 32, Ill.

USS GERRARD

ROUND STEEL **STRAPPING** FLAT STEEL



UNITED STATES STEEL

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One Machine Does All This!

PRINTS

Shipping or identification labels

DUPLICATES

Variable Information

CUTS

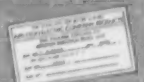
Labels to Size

... ALL
IN ONE
OPERATION

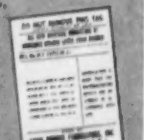
The new low cost Weber KC-E machine prints shipping or product identification labels and automatically cuts them to any size. In the same operation it duplicates the shipping address or any other desired variable information. It's fast . . . prepares over 100 labels per minute . . . keeps count, too! It's easy . . . anyone can operate it. Prints from inexpensive stencils that can be die-cut to reproduce any of your present labels. Just type in the variable information on the stencil and you are ready to run off all the labels you require. Eliminates messy board stencils, hours of typing time and costly printed labels. Used and approved by thousands of leading firms.



For Shipping Labels



For Product Identification Labels



For Linen Low Labels



Send For FREE Booklet

WEBER LABEL AND MARKING SYSTEMS
Div. of Weber Addressing Machine Co.
Mt. Prospect, Ill. Dept. P-12

Please rush me your booklet on the Weber KC-E machine.

Name _____
Firm _____
Title _____
Address _____
City _____ State _____

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126

PALLET LOADERS . . .

(Continued from page 121)

justification. A chart accompanying this article compares the annual cost of pallet stacking by manual labor and by an automatic pallet loader. It is important to note that his figures are based on an assumed plant production rate of about 15 cartons per minute, each weighing 50 pounds and that the average stacking rate of manual handling of these cartons is five and one-third cartons per minute per man.

Two sets of curves are shown; one set compares the cost of manual and automatic operations on a one-shift basis and the other set makes the same comparison for two shifts. It will be noted that the curves intersect at the average production rate or about four cases per minute. This means that below that production rate, manual operations are more economical than automatic pallet loading. In practice, however, the generally accepted production rate at which an

STOP COSTLY CHIPPING DAMAGE

Block, brace, inter-leave and wrap with
low cost, flexible **SOF-RAP**

Protect refrigerators, stoves and other enameled or high finished products from scratches, abrasion and shock with SOF-RAP. Soft and light as a feather, yet plenty tough! Complete 4-Way flexibility readily conforms to any shape. Use single sheet TYPE C for interior cushioning against shock and vibration — Type B duplex with cushion inner-sheet strip laminated to tough, durable kraft outer-sheet for exterior wrap — It permits slip-page, reduces friction damage. Low cost SOF-RAP comes in rolls, sheet, tubes or bags in several thickness weights.

SOF-RAP safeguards your products from:
SHOCK • CRUSHING • CHIPPING
SCRATCHING • ABRASION
VIBRATION • BREAKAGE
AND BOUNCE

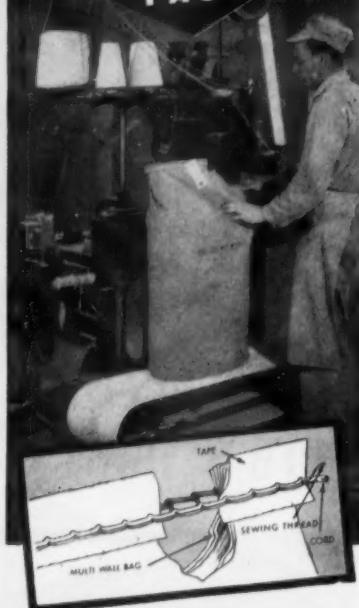
Write for this helpful booklet and samples. Test-try SOF-RAP today!



Circle No. 158 on Reader Service Card

Tape-Bound Closures for Multiwall Paper Bags!

LOW-COST
SECURE
FAST



UNION SPECIAL Style 21800 H Bag Closing Machines, with 80600 H sewing heads, shown here, are heavy-duty, high production units for making low cost tape-bound closures on large multiwall paper bags.

A single foot pedal controls synchronized conveyor and sewing head. Automatic tape cutter on sewing head saves time and helps make operation smooth and easy to learn.

Sewing head and conveyor are quickly adjustable for varying bag heights and scale or platform height from floor. Entire unit is ruggedly built for dependable service in high-volume production.



Ask for a copy
of this Bulletin

It's easy to find just the right unit to meet your individual needs in Union Special's big line of bag closing machines. Ask for a copy of Bulletin No. 200, "UNION SPECIAL FILLED BAG CLOSING MACHINES"

Union Special
MACHINE COMPANY

415 N. FRANKLIN ST., CHICAGO 10, ILL.
Circle No. 200 on Reader Service Card
FLOW

automatic pallet loader system is considered economically justified is about 15 cartons per minute, because the cost of the entire system must be considered.

Landon's computations indicate a saving of \$8100 per year on a one-shift plant operation averaging 15 cartons produced per minute and a saving of \$18,800 on a two-shift operation producing 17 cartons per minute. These savings are estimated on the basis of the production rates just specified and of the ability of a laborer to handle five and one-third 50-pound cartons per minute. In other plants the savings would be smaller if workers could stack more than five and one-third cartons per minute (as they could if cartons were lighter). On the other hand, savings would be greater if workers were unable to maintain that rate.

Two important generalizations that apply to any processing plant can be made from the curves. First, below a certain production rate, manual pallet loading is more economical. Second, above the break-even point, the cost of manual stacking increases rapidly, whereas the cost of operating the loader increases only slightly.

As an aid to calculating the relative operating cost between manual and automatic palletizing, Landon has developed the following formulas:

For Operating the Pallet Loader—

$$\text{Annual cost in dollars} = S \times A \times C (1.5r - E) - D - I$$

Where:

S = number of shifts worked per day

A = number of days of operation per year

C = avg. number of cartons per min. of plant production

avg. number of cartons stacked by loader per minute.

r = one hour's wages for first-class mechanic for maintenance plus materials

E = cost of 10 hp electricity for one shift

D = annual depreciation cost of equipment, about \$2500

I = annual insurance cost on loader, about \$70

(More on next page)



Basic "4-poster" idea makes tare-less, low-cost unit pack

A Signode unitizing method that can work for you!

Knowing how to do a job makes doing it seem simple. For example, devising a self-unitized pack of corrugated cartons. Signode Packaging Engineers adapted a *basic* unitizing idea to the job. A base of cartons was laid in the jig. Four corrugated "posts" were placed—one at each corner. The rest of the load of cartons was stacked on top the posts—and the entire load was bundled tightly into a tare-less, low-cost, self-unitized pack with Signode Steel Strapping!

Can self-unitized methods cut your packaging and handling costs? You can find out—without cost to you in any way! Ask to have a Signode fieldman call. In the meantime, send for our folder showing 6 *BASIC WAYS OF UNITIZING*.

SIGNODE Steel Strapping Co.

2618 N. Western Ave., Chicago 47, Ill.

In Canada: Canadian Steel Strapping Co., Ltd., Montreal • Toronto

Offices Coast to Coast—Foreign Subsidiaries and Distributors World-Wide

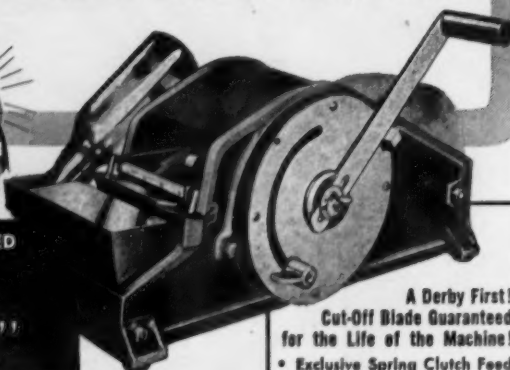
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THE MOST TALKED ABOUT GUMMED TAPE DISPENSER ON THE MARKET!



THE MEDIUM PRICED

Super
DERBY "152"



PRICED FAR LOWER THAN ANY COMPARABLE MACHINE!

Derby spent 2 years designing, building and testing the fabulous Super "152." It's a rugged, efficient, gummed tape dispenser with so many big machine features, so many unusual Derby exclusives, that its low price is truly sensational!

See your dealer or write Dept. F

DERBY SEALERS INC. Derby, Conn.

A Derby First!
Cut-Off Blade Guaranteed
for the Life of the Machine!

- Exclusive Spring Clutch Feed
- Feed Stop for Predetermined Lengths up to 30"
- Dispenses 1" to 3" width
- Auxiliary Water Reservoir
- Single Brush Moisture Control System
- Adjustable Variable Length Slotted Handle
- Interlocking Side Frames
- Automatic Tape Cut-off
- Visual Measuring Scale

PALLET LOADERS

Continued

For Manual Palletizing—

Annual cost in dollars =
$$\frac{60 \times S \times W \times A \times R \times M}{2000 \times H}$$

where:

S and A = terms explained in loader cost formula, above

W = weight of single carton, in pounds.

R = laborer's daily rate, in dollars

M = maximum number of cartons per min. of plant production (since working force must be staffed to handle peaks)

H = tons of cartons handled per man hour (include stand-by workers hired for relief of regular crew—usually one extra man per crew)

Using the above two formulas and applying production rates and wage scales for a particular plant, a fairly good comparison can be made between the two methods of pallet loading in that plant.

FOR

**FAST,
SECURE,
LOW COST**

BAG CLOSING

FISCHBEIN
Portable
BAG CLOSER

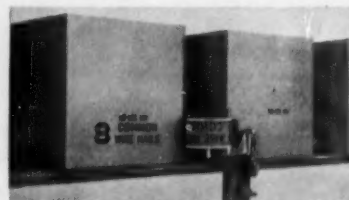
- A truly portable bag closer... Weighs only 10½ pounds.
- Requires no installation... plug into any outlet.
- Handles textile and paper bags.
- Simple to operate and maintain.
- Lowest priced bag closer on the market.

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MAIL THIS COUPON NOW
DAVE FISCHBEIN CO.

Dept. 4B
38 Glenwood Ave. N.
Minneapolis, Minn.

Name.....
Firm Name.....
Address.....
City.....
State.....

Low-cost case marker saves \$



**pays for
itself in
weeks!**

ROLACODER
Imprinter
**attaches to
conveyor or
case-sealer**



Now you can do away with that costly extra operation for manual rubber-stamping or stencilling of code-dates, lot numbers, contents descriptions, etc. on cases...or reduce big inventories of completely printed cases...and save thousands of dollars annually. Use an inexpensive ROLACODER machine to mark your cases automatically on the production line. Compact, precision-made ROLACODER is friction-operated, self-inking—makes single, accurately located imprint on each case to register with other copy. Uses quick-change rubber type or dies, holds 8-hour ink supply. Different models available to imprint top, ends, sides of small or large boxes, cartons, cases, other packages.

Write for descriptive literature

Gottsch

ADOLPH GOTTSCHO, INC.
Hillside 5, N. J.

50
Years of
Leadership

In Canada: RICHARDSON AGENCIES, LTD., Toronto & Montreal
Circle No. 99 on Reader Service Card for more information

Circle No. 81 on Reader Service Card for more information

Elevators Shipped in Fibreboard Packages

AS a result of the adoption of a new fibreboard package for its three models of Harvest-Handler grain and bale elevators, Belt Corp. has realized savings of more than \$10,000 in the first year.

The three-piece corrugated shipping unit was made possible when the elevator, which is joined at the center to permit extension, was packed nested instead of in one long section. This brought the entire unit into the practical range of fibreboard packaging.

The new package is sealed with two steel bands and five strips of pressure sensitive tape. It has high advertising value, improved safety features, reduced cube and lower weight than the former package. Since it completely encloses the lightweight aluminum elevator, appearance of the elevator at its destination has been measurably improved.

Specific benefits which have been cited by W. W. Wallace, Belt Corp. vice president, include: 50% reduction in package cost; 45% saving in packing labor; 22% cube reduction of the parts box; increase of 25 units shipped per truck with large savings in loading and handling; 12% reduction in gross weight.



Comparison of New Package With Old Package		
	Fibre Package	Old Package
Outside Size	105 x 21 x 11 3/4	196 x 117 1/8 x 11 1/8
Cube, Main Package	26,000 cu. in.	25,900 cu. in.
Cube Accessory Packs	1500 cu. in.	9120 cu. in.
Packing Labor	6 Man Minutes	13 Man Minutes
Shipments per Truckload	80 Units	65 Units

Courtesy Gaylord Container Corp.



Counterboy ADJUSTABLE MOISTENING CONTROL:

- Protects your Product • Saves your tape • Saves your labor costs
- Improves your carton's appearance • Impresses your customers

The counsel of Better Packages' 70 Counterboy field experts on materials and methods is yours for the asking. They can help you:

- Reactivate all the glue on your sealing tape • Select special purpose tapes
- Train employees to apply tape correctly
- Saves time and tape • Systematize your tape closure procedure



N. CAMPANARO, a typical Counterboy man, has 26 years' experience solving all sorts of packing and sealing problems. His service to national shippers started in 1927 in the Philadelphia area. In 1939 eastern Pennsylvania was included. In 1939, he handled the Cleveland area and, since 1941, bustling New England with headquarters in Boston.

Better Packages, Inc.

SHELTON, CONN.

WORLD'S LARGEST MANUFACTURERS OF TAPE DISPENSERS

FREE WRITE FOR TECHNICAL BULLETIN:
BETTER PACKAGES, INC.
 PLANT NO. 1 - D, 253 CANAL STREET, SHELTON, CONN.

☐ #3 Tape Moistening Requirements for Various Carton Surfaces
☐ #5 Gummed Tape Glues and Adhesives
☐ #7 Superiority of Gummed Tape Closure
☐ #9 Tape Applications - Building Strength from Weakness
☐ #11 Hot Water versus Dry Glue
☐ #12 Carton Sealing - The Easy Way
☐ #13 Parcel Post Wrap
☐ #16 Tape Widths and Weights

☐ Send us a Counterboy man to survey our Methods and Materials

Company _____
 Signed _____ Title _____
 Address _____
 City _____ Zone _____ State _____

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How to Protect Your Goods

...in shipment ...in storage

Get this
FREE
24-page
Shipping
Guide

Packed full of
money saving
ideas.
Send coupon
below



Here are the facts on how a super-strong, waterproof paper may be your answer to safe, lower cost shipping and storage. Read how rugged Fibreen, in rolls or blankets, gives new, low-cost protection from rough handling, water, moisture, dust, grit and staining. See how it provides protection for machinery, tools, steel, aluminum, rope, textiles, furniture, abrasives, leather, rubber and many other products.

The coupon below may help
you make important
shipping savings for
your company!
Send it in
today.



AMERICAN SISALKRAFT CORPORATION

Dept. F-12, Attleboro, Mass.

Please send fact-filled Fibreen booklet on how to save shipping costs.

Name
Title
Co. Name
Co. Address
City Zone State

Chicago 6, Ill. • New York 17, N. Y. • San Francisco 5, Calif.

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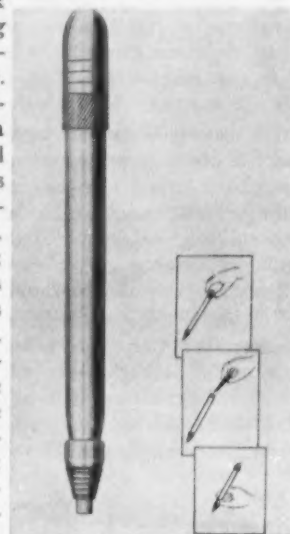
130

PACKAGING & SHIPPING NEW EQUIPMENT . . .

(Continued from page 122)

Fast, Clean Marking Pen

Feather-Mark, a cartridge fed felt tip marking pen which is said to speed up marking and to eliminate soiled hands, lost time and possible damage from ink smudging is being introduced by Binney & Smith Inc. The company manufactures Crayola Crayons, Staonal Marking Crayons and other art and industrial products. The Feather-Mark fills in 10 seconds without the hands having to touch ink. Speed and cleanliness have been made possible because the pen is filled by sliding in a sealed ink cartridge which automatically opens after it is in the pen.

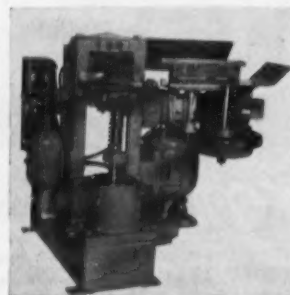


When the felt point is pressed down to write, a valve is released to start the ink flowing. The tip is capable of writing fine, medium-broad or heavy lines at will. Special ink is free-flowing and instant-drying and makes waterproof markings on all surfaces—paper, cardboard, wood, metal, glass, plastic, etc. No cleaner or thinner is required.

Write 282 on Reader Service Card for more information

Compact Box-Forming Machine

The H-S Box Forming Machine, manufactured by Hoague-Sprague Corp., is a semi-automatic unit measuring only 4 x 4 x 4 feet. The machine, already being widely used in the shoe industry, sets up and glues box covers and bases from flat blanks, producing sturdy boxes with double-folded glued ends and sides. It produces approximately 3000 pieces per eight-hour day depending upon size of carton and efficiency of the operator. Changeover time from box to cover or from size to size is not over one minute.



Write 283 on Reader Service Card for more information

FLOW

Cutter for Flat Strap and Wire

The #503 Strap and Wire Cutter, developed and manufactured by A. J. Gerrard and Co.



severs both flat strapping and round wire. A double duty set of cutting blades on the cutter makes it possible to cut flat strapping at the mouth of the tool and round strapping in a second set of cutters near the rear of the cutter head. The unique dual cutting feature is said to make the unit ideal for shipping and receiving rooms. It will cut strap as heavy as $\frac{3}{4}$ " x .035 or 12-gauge wire. The cutting blades can be re-sharpened.

Write 284 on Reader Service Card for more information

Tube Stitcher

The Model CAA-1244 Young Angle Arm



Stitcher has been designed to place stitches parallel to the seam on any tubular package, giving more strength because stitches cannot pull out easily. For hardware, or bolt and nut boxes, etc., which are used to merchandise over the retail counters and which are usually full telescope the stitcher allows for

placing staples vertically. This prevents staples from locking or binding in or against each other in opening and closing. Manufacturer is Diagraph-Bradley Inds., Inc.

Write 285 on Reader Service Card for more information

Heavy Duty Stretcher

The Model 40 Stretcher of the Gerrard Steel Strapping Division of United States Steel Corp. is for use with $\frac{3}{4}$ and 1 $\frac{1}{4}$ -inch flat steel strapping



in carload, truckload, pallet and unit reinforcement. It has an integrally built-in scrap cut-off shear for speed and safety. A cock-type strapping gripper provides a positive grip

and easy threading. A positive tension lever stop eliminates accidental release of strap tension and a tension handle repositioning button makes for easier tensioning. Weight of tool is 13 lb. 10 oz.

Write 286 on Reader Service Card for more information



cush-on-strap

CUSH-ON-STRAP is the only padded strapping for protective packing of appliances and other finished metal and wood products.

CUSH-ON-STRAP has giant strength — yet will not stain or mar the finest finishes . . . eliminates shipping damage such as broken catches, hinges, drawer tracks, etc., preventing costly replacements. CUSH-ON-STRAP is tailored for each job. While it is supplied continuous on fibre throw-away reels, the lengths are predetermined with the metal scored for ease in breaking. Standard steel tensioners and sealers may be used, for at each end of a length 6" of metal is free from padding. Saves you money . . . CUSH-ON-STRAP eliminates waste, ends fussy pre-assembly, is applied faster and with less labor. CUSH-ON-STRAP in one product, (steel padded with fluffy cellulose) is a means of strapping everything from automotive finished parts to x-ray equipment, and from household furniture to office equipment. Mail the convenient coupon for full particulars today.

USE THE COUPON to learn how we can serve you in the packing and shipping of your products.

SACKNER PRODUCTS
900 Ottawa Ave., N. W.
Grand Rapids, Michigan

How can CUSH-ON-STRAP lower our shipping and packing costs?

- ☐ Our products are
- ☐ Please have your Packaging Engineer demonstrate the advantages of CUSH-ON-STRAP.

Firm Name

Address

By Title

Sackner Products

900 OTTAWA AVENUE, N. W.

GRAND RAPIDS, MICHIGAN

Circle No. 182 on Reader Service Card for more information

FASTER packaging with TAPE-STRAP

No special equipment needed to apply this super-strong gummed reinforcement. Four short strips of Tape-Strap replace all-around strapping on this heavily loaded Belsinger Box.

Previous method



TAPE-STRAP
reinforcement

NO crushing NO cutting with TAPE-STRAP

Packaging is safer for personnel and merchandise because Tape-Strap is applied without tension, has no sharp edges. Two strips of Tape-Strap, top and bottom, provide reinforcement without damage.

Previous method



TAPE-STRAP
reinforcement

TAPE-STRAP

cuts packaging costs, does a better job for Chicago Screw Co.

The Chicago Screw Co., makes many types of metal products. Strong shipping containers, strongly reinforced, are necessary because of the weight of this merchandise.

Many of these containers are now reinforced with Tape-Strap filament tape. Packaging goes faster and easier, containers are neater... and Tape-Strap protection has proved better than the all-around, rigid reinforcement previously used.

Makers of all sorts of items, from mattresses and garden furniture to screw products and metal mouldings, are cutting packaging costs, providing better product protection, with super-strong Tape Strap. Why don't you check how Tape-Strap may save money for your company. Write for free sample roll and complete data.

LEADERS IN THEIR LINE

MID-STATES Gummed Paper Company

2511 S. DAMEN AVE., CHICAGO 8, ILLINOIS

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132

Re-styled Sealer Tool

Stanley Steel Strapping Division of The Stanley Works has announced that after much research, experimentation and job testing the Stanley A Sealer Tool has been restyled to assure even better performance and longer service. Two major changes have been made in the sealer: (1) A heavy zinc plating has been placed over all metal parts of the sealer and the old-style plastic handles have been replaced with bright green handles of tough longer lasting ethyl cellulose. The zinc plating is claimed to make the sealer more rust resistant and durable and to make it more attractive in appearance.



Write 287 on Reader Service Card for more information

Strapping Tape

The availability of Permcel 16 Hi-Tack Strapping Tape in a wide range of colors has been announced by Permcel Tape Corp. Originally available in Transparent only, Permcel 16 is now being marketed in White, Black, Blue, Dark Green, Yellow and Red. A cellulose acetate film, rayon reinforced tape, it is said to have excellent shock resistance, allowing it to withstand breakage caused by rough handling of packages or bundles on which it is used. It is water resistant and is recommended for bundling tubing, wire and rods; for holding telescope box lids, doors, and drawers of refrigerators, stoves, desks, cabinets and other furniture during shipment; for palletizing and unitizing cartons to facilitate material handling.

Write 288 on Reader Service Card for more information

Stencil Ink in Aerosol Dispenser

An instant drying stencil ink, packaged in an aerosol dispenser has been introduced by the D & A Co. Available in black, white, yellow, red or blue colors, and called Quikspray Aerosol Stencil Ink, it is ideal for stenciling on paper, wood, burlap, metal, etc. It may also be used for color coding tools and metal stock, inspection marking and design layout. Depending upon the size of the stencil



and the material to be stenciled, from 150 to 200 three-line stencils can be made with a single dispenser. The ink dries instantly, it will not run off or smear. It is waterproof, oilproof, non-flammable, non-toxic and non-flaking.

Write 289 on Reader Service Card for more information

FLOW



Packaging 8 Million Xmas Gifts

Operation Poinsettia, a 30 million dollar program for sending eight million Christmas food packages to needy families throughout the world, was set into motion recently by President Eisenhower. It signaled the start of one of the biggest and speediest packaging and shipping operations ever carried out.

Quaker Export Packaging Co., Philadelphia, was given the responsibility for preparing the packages and delivering them on time. An indication of the size of the job which that firm has undertaken is seen in the strapping function alone. To help get the job done, Quaker installed 14 power strapping machines (similar to those illustrated above), capable of applying up to 700 lengths of $\frac{3}{8}$ " x .020" straps per hour. About 200 thousand pounds of strapping have already been ordered and the completed job will require the use of more than eight million seals.

Courtesy, Signode Steel Strapping Co.

CUTTING *Your Costs* IS OUR BUSINESS

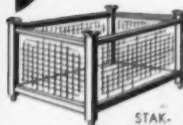


IT CAN BE DONE with **ERCO** STAK-PAL SYSTEM of Material Handling

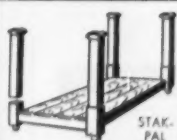
STAK-PAL tubular stacking racks have been designed to handle quickly and efficiently your every storage need. Stacking operations are safer, easier and trouble-free with removable corner posts or end frames. QUANTITY PRODUCTION, STANDARD SIZES and our own SEAMLESS TUBE MILL assure you of a low cost product, combined with quality workmanship. All STAK-PAL tubing, square or rectangular has minimum 11 gauge wall for rugged strength and almost complete elimination of maintenance costs. Specials made to specifications.

Let us prove these facts —

Write for catalog giving you complete information.



STAK-BOX



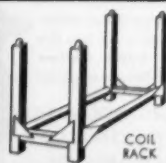
STAK-PAL

C. E. ROBINSON CO.



Manufacturers of
Metal Products

222 COLBURN AVENUE
JOLIET, ILLINOIS



COIL RACK



END FRAME RACK

Circle No. 179 on Reader Service Card for more information
DECEMBER, 1954



* ALBION'S NEW CADMIUM PLATED— ABRADED CASTERS

Now . . . a new look for industrial casters, Albion's Cadmium Plated and surface-abraded casters offer a life-long, rust proof finish that *never* requires painting.

Top plates, yokes and thrust buttons have smooth, satin-like silver finish as tough as the metal itself. They look clean, stay clean and improve the appearance of your product or equipment.

The CPA* finish is available in practically all Albion Industrial Caster series, both rigid and swivel models . . . at no additional charge!

So, if you want the finest of industrial casters and appearance as well, be sure to specify Albion's new CPA* finish on your next order.

Represented in Canada:

C. J. McDONALD
Rear 1564 Queen St. W., Toronto



**ALBION
INDUSTRIES, Inc.**
ALBION, MICHIGAN

Circle No. 8 on Reader Service Card



a *Balanced* BARROW for Forward-End Dumping!



★ REINFORCED FOR HEAVY-DUTY SERVICE!

This Sterling Wheelbarrow has a reinforced tubular steel frame with special steel nose shoe. Provides perfect balance for forward end dumping and extra strength for heavy duty service. Rugged construction includes V-shaped tray braces and 12-spoked steel wheel. Ideal for wheeling sand, scrap, castings, coal and other heavy bulk materials. Can be furnished with pneumatic or zero pressure wheel. Prompt shipment.

Write for literature.

Sterling

FOUNDRY EQUIPMENT

STERLING WHEELBARROW COMPANY • MILWAUKEE 14, WIS. U. S. A.



TRANSPORTATION . . .

(Continued from page 97)

then, when a man lifts a 50-pound load a height of 5 feet, he's expended 250 foot-pounds of energy.

The point of these remarks concerning high school physics is this: Every unit of matter converted into a salable product represents an expenditure of foot-pounds of energy equal to all the movements required for the manufacture and delivery of the product. That expenditure has as real a price tag as the raw material itself or the labor that goes into the manufacturing process.

The foot-pound energy cost of Movement may include the freight charges for incoming castings; the wages and operating costs of the men and machines who unload and store incoming supplies; the wages and operating costs of men and machines who move supplies to and from storage, process or shipping.

At first, modernization of Movement was a hit-or-miss proposition.

BULKY, AWKWARD, HEAVY LOADS

Handled

- EASILY
 - SAFELY
 - QUICKLY
- for LESS

2 TON
CAPACITY



SUBSTITUTE FOR AN ELEPHANT

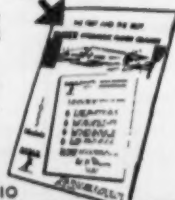
GET THIS BOOK

Gives all the facts about Ruger's complete line of hydraulic floor and truck mounted cranes, capacities 1000 to 6000 lbs.

RUGER CRANES



401 West Fourth St. UHRICHSVILLE, OHIO



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134



BUILT
FOR THE
JOB
Bond
CASTERS
for faster, easier
materials handling

THE kangaroo has a real handling problem . . . but Nature gave it the jump on its neighbors with a handy carrying pouch, built for the job. And you can get the jump on your materials handling problems by specifying Bond built-for-the-job Casters. For dependability, economy and trouble-free service, your best buy is Bond!

See your industrial distributor—he has the right Bond Casters built-for-your-jobs.

BOND FOUNDRY
& MACHINE CO.
Manheim, Pa.



3-A Series
—Single Ball
Race Swivel Caster

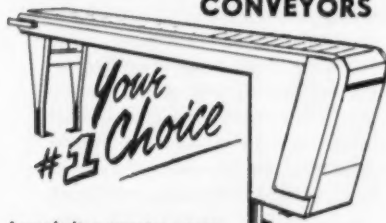
1-A Series
—Stationary Caster

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FLOW

Circle No. 2 on Reader Service Card

16th First Line Features

MAKE ARMORBELT SECTIONAL METAL BELT CONVEYORS



Armorbelt guarantees superior performance wherever used. Ordinary loads, heavy loads or bulky loads move smoothly, efficiently, safely in any direction... vertical, horizontal or inclined. Models available for all applications in widths from 6 inches to 10 feet... standard or heavy duty.

ARMORBELT CONVEYORS ARE INSTALLED, AND IN USE AS:

PACKAGE CONVEYORS
FLOOR CONVEYORS
MULTI-LEVEL CONVEYORS
VERTICAL CONVEYORS
PRODUCTION LINES

IMMEDIATE DELIVERIES!
DISTRIBUTOR
TERRITORIES OPEN!

*Write for
Catalog*



M-H STANDARD CO.

515 COMMUNIPAW AVE. JERSEY CITY 4, N. J.

VERSATILE BULK FEEDING...

from a trickle to a torrent with VELOFEEDER

A mechanical vibrating feeder especially designed for all materials such as sugar, bran, pellets, feeds, chemicals, and grains at lower cost, higher efficiency.

Here's Why!

Higher Output—300 to 50,000 lb./hr. hard granular materials; 300 to 30,000 lb./hr. soft ground materials.

Lower Power Needs—1/8 hp. motor powers unit—inexpensive as a 100-watt light bulb!

Smaller Space Needs—35 inches long, 17 1/2 inches wide, 19 inches high. Standard vibrating tray 16 inches wide—stainless steel when required.

Easier Control—simple adjustment over wide operating range (near 0 to 50 fpm. max.).

Safer Operation—motor is explosion-proof (Class 2, Group G), where hazardous conditions exist, at slight extra cost. Complete dust enclosure on application.

Less Vibration—working frequency is 1850 vibrations per minute; little or no vibration is transmitted to mounting installation (mounts with only 4 bolts!).

When situations arose where savings from the substitution of a machine for manpower, or the substitution of one machine for another, were so obvious as to hit management in the face—management approved that substitution.

Movement methods introduced under the spur of a wartime emergency have been permanently adopted and extended to help industry speed peacetime goods for our growing economy. As the economy became more competitive, management faced the harder problem of maintaining high rates of production at lowered costs. Enlightened management then began to appreciate what all of you have long known, namely, that the major area for cost cutting today is in Movement.

There has been a substantial amount of discussion about the importance of rapid amortization of capital goods, especially machine tools, so that industry can continue to modernize. But the following relationship has not received its due consideration. If we take a company where 30 cents out of every cost dollar represents labor



If you're interested in better bulk feeding at lower operating cost, write for Bulletin 5302 with complete specifications and drawing.

Richardson

SCALE COMPANY, Clifton, New Jersey

Atlanta • Boston • Buffalo • Chicago • Detroit • Houston • Memphis • Minneapolis
New York • Omaha • Philadelphia • Pittsburgh • San Francisco • Wichita • Montreal
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MATERIALS HANDLING BY WEIGHT SINCE 1902

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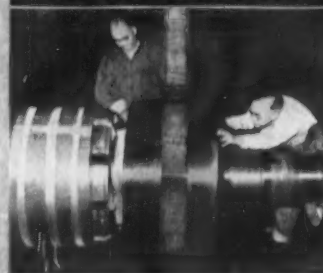
DECEMBER, 1954

GRIPPER

WOVEN WIRE

SLINGS

SAFER—
MORE VERSATILE



SAFER—because each sling is pre-tested to rated load capacity before shipment, pre-tested with a 5-1 safety factor. Moreover, the spiral loop construction of Gripper slings guards against sudden breaks in use... specially heat treated handles provide extra strength at the hook.

MORE VERSATILE—use your Gripper sling for light or heavy, bulky or compact loads of any material or parts. Fully flexible sling body grips completely around even small radius loads in choke hitch. Broad, flat sling body provides wider bearing surface for greater load stability in either basket or choke hitch.

AVAILABLE—in standard lengths and widths with capacity up to 100,000 lbs. Special sizes and capacities on request. For details, see your mill supply, materials handling or safety equipment distributor. Or, write direct for free catalog and name of nearest distributor.



The Cambridge Wire Cloth Co.

Dept. W • Cambridge 12, Md.



WIRE CLOTH

METAL CONVEYOR BELTS

SPECIAL METAL FABRICATIONS

OFFICES IN LEADING INDUSTRIAL AREAS



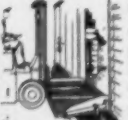
Dealers—write for open territory data.

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135

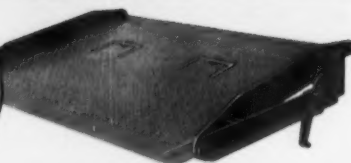
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The STRONGEST, SAFEST Dockboard Ever Made!

<p>1. Pick It Up!</p>  <p>Ramp transported to location on forks of any standard fork lift truck.</p>	<p>2. Put It Down!</p>  <p>Ramp firmly secured by self-levelling locking device in floating arm.</p>	<p>3. Go To Work!</p>  <p>With forks withdrawn, lift handles drop into recesses for smooth riding surface.</p>
--	--	--

ALL **E-I-W** STEEL "ONE-MAN" Bridge Ramp

**NOW!... 1-PIECE
LIFT HANDLES**
Rugged, All Steel
WILL NOT BREAK



For greater fork lift truck efficiency between R.R. Car, Truck, Trailer Truck and Platform. Patented, self-levelling floating arm locking device secures ramp in position when not in use, lift handles recessed in riding surface.

LOAD CAPACITY: 15,000 LBS.

Sizes and types to span gaps from 5" to 58"

Rise 0" to 7" (+ or -)

Also, modified for use on trailer trucks with recessed bumpers.

For Specifications and Complete Information, write:

ELIZABETH IRON WORKS, Inc.

Materials Handling Specialists, Steel Fabricators SINCE 1907

528 GREEN LANE, ELIZABETH, N. J.



There's a
BEST TIME
to service
powered equipment

Prevent major repair
with **TIMELY** care

HOBBES Engine Hour METERS



Manufacturers specify how often maintenance is needed for trouble-free operation of lift trucks. Your "inside fleet" lasts longer and requires fewer repairs when lubrication, overhaul, oil change, etc., are done **ON TIME**. The **HOBBES HOUR METER** TELLS YOU WHEN.

NOT A REVOLUTION COUNTER

... but an electrical timing instrument that shows total **HOURS** and **MINUTES** of equipment operation. This accuracy is important for genuinely effective protective maintenance.

APPROVED BY LEADING MANUFACTURERS

Leading manufacturers install the **HOBBES HOUR METER** as original equipment ... or recommend it as an approved accessory. Ruggedly built and easy to install. For full details, ask your factory branch, representative or distributor ... or write:

New and improved
through continuing
engineering research

ORIGINATED AND MANUFACTURED EXCLUSIVELY BY

John W. Hobbs Corporation
2061 YALE BLVD. SPRINGFIELD, ILLINOIS

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136

TRANSPORTATION

Continued

cost, only 1/3, or 10 cents, is apt to represent production labor—Measurement and Modification labor. The other 20 cents is, in the main, labor expended on Movement. This is not untypical.

Many, if not most, manufacturing companies can get a greater return for every dollar of capital investment by improving Movement than by improving Measurement and Modification combined. On the basis of the ratio just cited, a 10 percent reduction in the cost of Movement will be the equivalent of a 20 percent reduction in the cost of Modification and Measurement. And although I haven't made detailed comparisons, my own experience tells me I'm on safe ground when I say that, in the average plant, the capital cost of effecting a 10 percent cost reduction in material handling—or Movement—would be considerably smaller than that needed to cut production costs by 20 percent.

for Better Belt Joints

To keep belts in service longer, use only **GENUINE Clipper Belt Hooks** applied with **Clipper Belt Lacers**.

use Clipper Belt Hooks

Clipper Hooks are made of the finest quality wire—**BETTER** than ever before—produced for our exclusive use. Hooks hold with firm, sure grip—give longer satisfactory service.

and Clipper Belt Lacers!

With the **Clipper No. 9 Portable Lacer**, you can lace up to 6 inches of belt in one quick, easy operation. For wider belts, merely repeat the operation.

Phone your Industrial Distributor for a demonstration!

CLIPPER BELT LACER COMPANY, GRAND RAPIDS 2, MICHIGAN, U.S.A.



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FLOW

Although the technique of Movement planning and operation is in its infancy, full advantage should at least be taken of the equipment and know-how already available. Too many companies, and especially the smaller companies, are still in a relatively primitive stage of material handling and movement. In the years between now and 1960, my theoretical target date, I doubt if there will be any radical changes in the field of Movement. Rather, we'll probably see the general level of Movement know-how rise to that of the most advanced company today.

In the future, management will look upon Movement as equal in importance to Measurement and Modification. Management will visualize the totality of movements—from supplier to plant, through the plant itself and from the plant to the ultimate point of consumption—rather than as a series of isolated handling problems. And management's plans will be based on that unified outlook.

The shape, form and content of the raw materials, the design of the

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*Pays for itself in
Less than 100 days*



FRIED
Stripveyor
Patented
makes sheet handling
wholly mechanical

Automatically picks up cut strips, conveys them beyond shear bed. Makes shear 100% efficient. Adjustable to any height up to 45"—synchronous to shear speed—handles any gauge sheet up to $\frac{3}{8}$ ", widths as wide as allowable by standard 20" back gauge, lengths to size of shear. Portable! Caster-supported carriage supplied with floor locks.

Shear to .005"

FRIED
Liftveyor
Patented

Enables clean-cut wide shearing to .005" regardless of material. Eliminates flexing—supports sheet from underside while sheet edge is against back gauge—then conveys it beyond shear frame. For sheet or plate up to $\frac{3}{8}$ " thick.



For complete
strip handling convenience
add FRIED Strip-Stacker to
Liftveyor or Stripveyor.
Write for full details today!

FRIED STEEL EQUIPMENT MFG. CORP.
528 EAST 119th ST., NEW YORK 35, N. Y.

BOWERS

BATTERIES

*Always
Better*


BOWERS BATTERY & SPARK PLUG CO., READING, PA.

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DECEMBER, 1954

UNITABLE
BELT CONVEYOR

For Assembly - Inspection - Packaging

The most ADAPTABLE portable conveyor you
can find. Exclusive "unitized" design
10' to 80' lengths. Write for
UNITABLE Bulletin now.



**CONVEYOR
SPECIALTY
COMPANY INC.**

36 Newport Avenue
North Quincy 71, Mass

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He's lifting
5 tons
with 1 finger

Speed Handling...



Increase Storage Capacity with a C-F Lifter

Here's 1 man—a C-F Lifter and an electric hoist handling 5 ton packs of sheet steel with speed, safety and economy. One C-F Lifter handles a wide range of sizes . . . adjustments are made

by the operator in a few seconds, permitting the Lifter to shift from wide to narrow sizes in a few seconds. Made in capacities from 2 to 60 tons.

Bulletin SL-28 shows you how to cut handling costs. Write for it today.



CULLEN-FRIESTEDT CO.

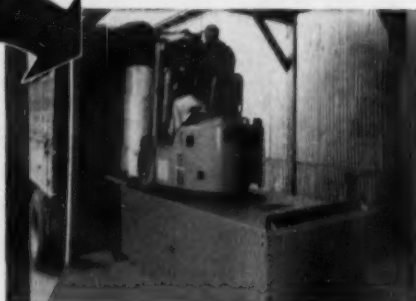
1307 South Kilbourn Avenue • Chicago 23, Illinois



Get a **LIFT** from **FIELD**... *The Complete* **HYDROILIC** Line

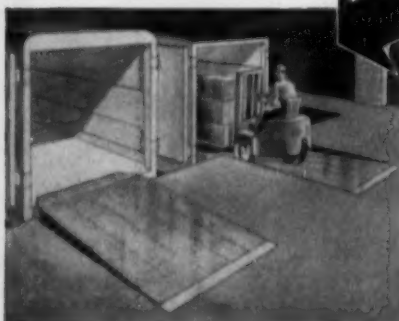
LOAD-O-MATIC

Automatically carries loads from loading dock to truck floor, whether truck is above or below dock. No hand switches! Exact levels! Can also be installed at ground level with rear safety barrier to prevent run-off. New Field **HYDROILIC** ram is free floating and rapid in operation. Models, 6000 to 20,000-pound capacity.



RAMP-O-MATIC

The leading automatic loading ramp because platform is built in five non-skid sections to compensate for out-of-level truck beds, or can be built with the usual one-piece solid top. Operated by the new Field **HYDROILIC** ram. Has no traveling hose. Motor and pump mounted on ramp. Automatically adjusts to any incline. Models, 10,000 and 20,000 lb. capacity.



FIELD ENGINEERING PRODUCTS CO.

66 FOOTE AVENUE, JAMESTOWN, N. Y.

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TRANSPORTATION

Continued

product and its components, the methods of manufacture and assembly, the type of packaging, the way it is warehoused or stored by dealer or distributor, all affect the energy expended on movement.

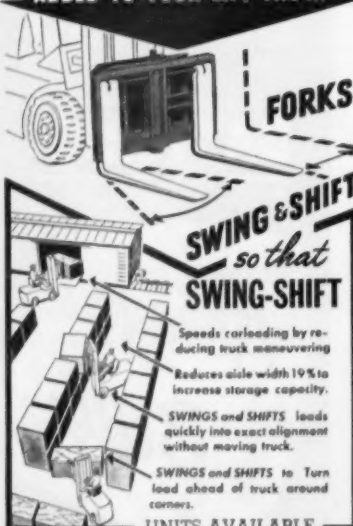
Movement is "Work"

The Movement Manager and his staff will work closely with their opposite numbers in the transportation, engineering-construction and equipment fields on ways and means of solving their company's Movement problems.

Up to this point I've addressed myself to the changes in management's approach and thinking in the years ahead. But what of labor?

One of the basic, long-range goals of civilization is the elimination of work. But before biblical quotations such as "By the sweat of his brow . . ." are flung at me, let me give you my definition of work. Work is any activity that society requires or desires, but which,

HANDLE IT FASTER! *Eliminate Non-Productive Maneuvering* with a **SWING-SHIFT UNIT** HYDRAULIC FORK CONTROL ADDED TO YOUR LIFT TRUCK



UNITS AVAILABLE
FROM 3,000 TO 16,000 LB. CAPACITY

See Your Lift Truck Dealer or Write

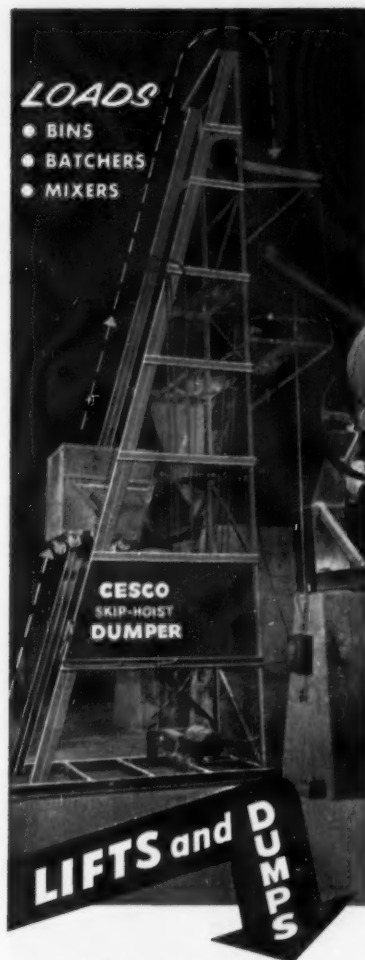
SWING-SHIFT MFG. CO.

BOX 987
LONGVIEW, WASHINGTON

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FLOW

LOADS

- BINS
- BATCHERS
- MIXERS



BAGS, BULK, BARRELS, BOXES MECHANICALLY!

You can save time and money with increased safety by installing a CESCO Skip-Hoist Dumper. Lifts, upends and dumps 100 loads per hour with a lifting capacity range from 100 to 1500 lbs. Single and multi-purpose portable models in standard heights from 6 to 10 ft. Stationary models to 20 ft. Easy, safe operation from push button controls speeds up material handling and eliminates accidents.

Write for complete catalog . . .

ESSEX CONVEYORS, INC.
165 Franklin Avenue, Nutley 10, N.J.

COLSON EQUIPMENT & SUPPLY CO.
1317 Willow Street, Los Angeles 13, California

CESCO DUMPERS

Circle No. 57 on Reader Service Card
DECEMBER, 1954

practically speaking, nobody enjoys doing.

The great majority of least desirable activities—those necessary activities which nobody enjoys and which we call work—can be found in Movement.

Few men can long look upon the expenditure of their own physical energies for the sheer task of moving matter as a satisfactory means of earning a livelihood. Exertion of brute force may suit an animal, but not a man. Operating a machine to perform movement is another matter entirely. Who of us really enjoy watching men with picks and shovels digging a ditch? But look at the crowds of people watching a man operate a giant shovel or crane!

The integration, mechanization and automation of Movement, then, fall in line with the general progress of civilization towards the elimination of work. Man will be able to serve himself and his community, not by the brute force of his muscles but by the skills of his hands and mind.

In my opinion, the greatest

**New
FLOW RACK
stops the
standstill that
makes "dead"
storage a
profit killer.**

**find out how
on pages 84 & 85**

Circle No. 174 on Reader Service Card

**PERFORM MORE
EFFICIENTLY AT
LOWER COST AND
LAST LONGER!**



DARNELL CASTERS & WHEELS

RUBBER TREADS . . . a wide choice of treads suited to all types of floors, including Darnello-prime oil, water and chemical-resistant treads, make Darnell Casters and Wheels highly adapted to rough usage.

RUST-PROOFED . . . by the Udylite process, Darnell Casters give longer, care-free life where water, steam and corroding chemicals are freely used.

STRING GUARDS . . . Even though string and ravelings may wind around the hub, these string guards insure easy rolling at all times.

LUBRICATION . . . all swivel and wheel bearings are factory packed with a high quality grease that "stands up" under attack by heat and water. Zerk fittings are provided for quick grease-gun lubrication.

Always **SWIVEL**
and **ROLL**

A TYPE
AND SIZE
FOR EVERY
PURPOSE

*Free
Manual*

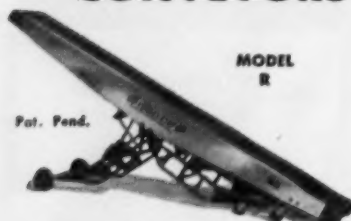
**DARNELL CORPORATION,
LTD.**

DOWNEY (LOS ANGELES COUNTY), CALIFORNIA
40 WALKER STREET, NEW YORK 13, NEW YORK
36 NORTH CLINTON STREET, CHICAGO 6, ILLINOIS

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HANDLE More FOR Less!

WITH **BELT** PORTABLE CONVEYORS



Pat. Pend.

VERSAVEYOR BAG AND BOX HANDLER

Manufacturers, warehousemen and retailers find this handy unit the quick, easy way to speed up materials handling and slow down costs. Lengths to 19 ft. with or without undercarriage, up to 25 ft. for floor-to-floor applications. Distributed loads up to 300 lbs.

BELT THE BELT CORPORATION
121 Stahl Rd., Orient, Ohio

TRANSPORTATION

Continued

single influence on material handling between now and 1960 is likely to be the renaissance of the philosophy of integration. The "integrated" man is but a few steps removed from the "integrated" management—and the "integrated" plant.

To get back to the Measurement-Modification-Movement analogy, we must work to the day when Movement is accorded the same status as the two other functions. I don't think that day is far away. I believe we're beginning to look at a problem or an object in terms of the whole, rather than in terms of its individual parts. And once management does that, it can't help but realize that Movement—or material handling—deserves more than an occasional second-look from a third vice-president.

Otherwise, a lot of companies are apt to see their profit margins declining—and their more progressive competition pass them by.

NOLAN ONE-MAN CAR DOOR OPENER



**Opens Doors in 20 Seconds
or less!**



The Nolan Car Door Opener gives one man a tremendous amount of pulling energy, to get the most stubborn, hard-rolling door wide open in a hurry! New chain has 2000 lbs. tensile strength. No gears needed. No mangled limbs or loss of life. A few quick pulls on anchor chain gets any door open in a jiffy. The NOLAN saves its low initial cost in first hour of operation.

New safety and efficiency features now make the Nolan 1-Man Car Door Opener a more necessary labor-saving money-saving help than ever before.

**Many thousands in
constant daily use!**

Free Literature. Order one or more NOLAN Model H Car Door Openers now. Catalog on request.

The NOLAN Co.,
110 Pennsylvania St.
Bowerston, Ohio

\$37⁵⁰

F.O.B. Bowerston

MERRILL MATERIALS HANDLING DEVICES



13-44-2

MERRILL BROTHERS
56-74 ARNOLD AVENUE MASPETH, N. Y.

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140



FREE
LAYOUT SERVICE
for all
storage needs

Trained Equipto engineers will lay out your storage facilities . . . suggest the number and types of units you will need . . . assure maximum use of every inch of floor space . . . increase working efficiency by expert arrangement of units. Take advantage of this free service. Ask our engineer to call, or write for catalog on complete line.

Equipto

DIVISION OF ATRONA EQUIPMENT CO.

805 Prairie Ave., Aurora, Illinois
Steel Shelving . . . Parts Bins . . . Drawer Units

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FLOW

PERSONNEL CARRIERS . . .

(Continued from page 70)

and more efficiently. It was, however, the consensus of opinion that the initial equipment investment was small compared to results obtained. It seemed to be relatively impossible to evaluate in dollars and cents the time of so many different individuals, but it was established that the units had paid for themselves more ways than one.

An outstanding feature of the little units is their versatility. Hitches can be attached for pulling various loads of materials to given destinations; they are handy as stock pickers and inventory trucks; they require little aisle space, are fast and can be dispatched quickly; and they can operate just as efficiently outdoors as inside.

Have you considered personnel carriers for your operation? It's very possible their use will result in greater efficiency and unexpected profits.

FLOW thanks the following for pictures and data used in this story: Autoette, Inc., Automatic Transportation Co., Hyster Co., Lewis-Shepard Co., Mercury Manufacturing Co., Mid-Empire Electric Corp., Yale & Towne Manufacturing Co.

Conveyor Group Elects New Officers



Jervis C. Webb



Fred S. Wells

At the 21st annual meeting of the Conveyor Equipment Manufacturers Association, Jervis C. Webb was elected president and R. C. Sollenberger was re-elected executive vice president. Other officers are: Fred S. Wells, vice president; E. E. Boberg, treasurer; and R. B. Maas, secretary. Directors include D. E. Davidson, J. H. Walker and Adrian W. Rich.

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Here's the way to handle and store bulk materials

You are looking at two Neff & Fry storage bins at the Monroe, Mich., plant of Detroit Stoker Co. They are used for handling and storing coal. Each is 20' dia. x 55' high. Total capacity is approximately 1600 tons. We also erected three 14' x 40' bins for the same company to handle and store foundry sand.

Naturally, materials are put into and withdrawn from the bins by power, eliminating virtually all manual labor. We collaborated with the manufacturers of equipment in designing the conveying systems.

Our bins (silos) have many advantages over other types of



bins. Complete information is given in our folder, "Bins With the Strength of Pillars." Ask for a copy.

THE NEFF & FRY CO. • 110 Elm St., Camden, Ohio

NEFF & FRY ➔ **SUPER-CONCRETE STAVE STORAGE BINS**



WISCONSIN
HEAVY-DUTY
Air-Cooled
ENGINES

In 1953 a leading Design trade magazine conducted a survey among 1902 manufacturing plants on the use of Internal Combustion Engines of less than 60 hp., as power components in equipment made for resale.

Projected returns from 42.6% of plants contacted showed an estimated 678 plants using engines in the stated category, representing total engine purchases of 2,727,216.

Answering the question: "Who makes the Internal Combustion Engines you Use?" . . . Wisconsin Motor Corporation received 132 mentions, as against 105 for the second place builder, 56 for No. 3, 51 for No. 4—in a list of 41 classified engine manufacturers.

This outstanding preference for Wisconsin Heavy-Duty Air-Cooled Engines (although limited to a power range of 3 to 36 hp. in a broad survey classification including ALL engines below 60 hp.) provides tangible evidence that "WISCONSIN" rates first among men who know engines best. We'd like to count you among them.



WISCONSIN MOTOR CORPORATION
World's Largest Builders of Heavy-Duty Air-Cooled Engines
MILWAUKEE 46, WISCONSIN

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Farquhar

power-belt and gravity
CONVEYORS
are the conveyors
FOR YOU



FREE—

"Owners Report"—a booklet of case histories of money-saving conveyor installations.

WRITE TO
THE OLIVER CORPORATION
A. B. FARQUHAR DIVISION
Conveyor Dept. D-06, York, Pa.

PRACTICAL MANUAL . . .

(Continued from page 31)

2. Program advantages.

More effective personnel is developed to insure the success of a material handling system—to reduce operations and maintenance cost, to reduce idle man-and-machine-time, to reduce handling time and space in all departments, and to improve plant morale.

3. Kind of programs.

Each program will have to be tailored to fit plant conditions. Some phases of training are: training of equipment operators; training of material handlers; achievement of general appreciation for material handling methods, plant layout, standard operating procedures and the like.

Equipment

1. Mechanical equipment.

Advantages gained by the use of mechanized equipment include: less fatigue for workers; reduced costs and increased safety; larger



REVOLVATOR RED-GIANT features Safety-Ease

Durability—built in by 50 years of Revolvator Co. experience—is still the fundamental of the Red Giant lift-truck line. Maneuverability, plus the safety of their exclusive double stroke mechanism, make the models shown leaders in their fields. There is a Red Giant lift-truck available for every use—for every capacity.

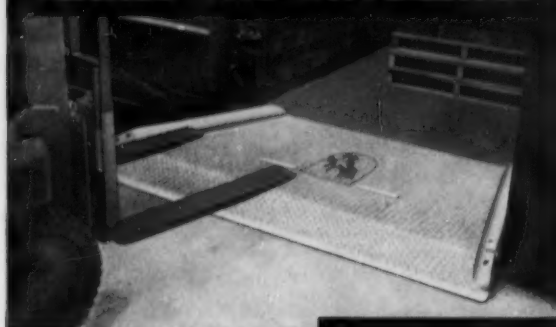
Write for the full facts today.



REVOLVATOR CO.

8739 Tonnele Ave., North Bergen, N. J.

"UNDER-SIDE" DESIGN MAKES THE DIFFERENCE



Only in Bronco Magnesium Bridge Ramps do you get the exclusive "Under-Side" construction design that gives you greater strength, longer life with a minimum of weight. Bronco's "Under-Side" design is only one of the reasons why the 12,000 lb. capacity bridge ramp illustrated above is doing an outstanding job reducing materials handling costs at Alexander's Market Warehouse, Glendale, California.

Write today for complete information on all the features of Bronco Bridge Ramps.

- * Low initial cost—lifetime service
- * Maximum strength—minimum weight
- * Safety tread surface for full traction
- * Positive, adjustable locking device
- * Side guards designed to prevent tire damage or equipment run-off
- * Carloading or Truck Ramps—capacities from 1000 to 12,000 lbs.

Bronco's reinforced construction features offer maximum strength with a minimum of weight



BRONCO
Magnesium
BRIDGE RAMPS

BRONCO PRODUCTS COMPANY

717 Stanford Ave.
Los Angeles 21, Calif.

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OHIO Industrial Trucks & Trailers



Capacity 20000 lbs.

Dual Wheel Construction using Pressed-On Rubber Tires. 18" x 5" x 14" and Hyatt Roller Bearings. Platform Size 48" wide x 96" long x 25" high with open type deck.

Various Platform Sizes may be furnished.

Heavy Duty Trucks and Trailers to YOUR Specifications. Write for Detailed Information.

THE OHIO GALVANIZING & MFG. CO.
NILES

Established 1902

OHIO

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volume of work per operator, resulting in less idle time for skilled, semi-skilled and unskilled men.

2. Utilization of present equipment to capacity.

Keep detailed records on all equipment with specifications and work assignments. What is maximum work load capacity? Day-to-day work load? After present equipment proves inadequate, plan a new material handling system or add more equipment.

3. Selection of equipment.

After a thorough analysis of the problem, equipment must be selected for the main objectives of reducing cost, increasing capacity, improving working conditions and bettering distribution. Buy equipment for overall savings—not initial cost.

4. Standardization of equipment.

Standardization is important because it permits easier training of operators, the stocking of fewer spare parts, interchangeability of equipment between plants and departments, and more economical purchases. Special equipment should be used only where conditions demand it.

5. Provision for alternates.

Provide alternate methods and equipment in case the best system breaks down.

6. Building conditions.

Provide adequate and suitable running surfaces, clearances and other conditions necessary for good operation.

7. Maintenance.

Set up adequate maintenance programs—and follow through. Daily, weekly and other periodic inspections should be scheduled. Established procedures result in less congestion in the maintenance shop, reduce needs for major overhaul jobs, and increase the life of equipment. A planned program not only results in lower expense but also in even greater savings as equipment is kept in use, thus reducing lost time.

The next installment of the Manual will take up the regulated flow of parts and materials as coordinated with Production Control.

Circle No. 184 on Reader Service Card for more information

RENT OR BUY
HEAVY-DUTY FORK
LIFTRUK
on the
**"DAY-BY-DAY
EARN-ITS-WAY
PLAN"**

5-7½-10-15 ton
CAPACITIES



If you can reasonably use a Heavy Duty LIFTRUK for at least two hours a day average, to improve the movement of goods in process or reduce materials handling operations, then you should be interested in this unusual "rent-or-pay-as-you-use" plan. Proper cost accounting methods often show that man-hours saved, storage space gained, or time in transit reduced, add up to a profit well above the payments required for LIFTRUK for purchase or rental charges.

Write for "Earn-Its-Way" Plan to

SILENT HOIST & CRANE CO.

Pioneers of Heavy Duty Materials Handling Equipment
888 63rd Street, Brooklyn 20, N. Y.

BREWERY
stores grain, malt,
sugar in multiple

Kalamazoo

**VITRIFIED GLAZED TILE
INDUSTRIAL STORAGE SILOS**

Here's another of the many industries using Kalamazoo storage silos. You, too, will get advantages unequalled by other bins or methods—materials protected from weather, contamination, fire, theft. First cost the only cost—no maintenance problems.

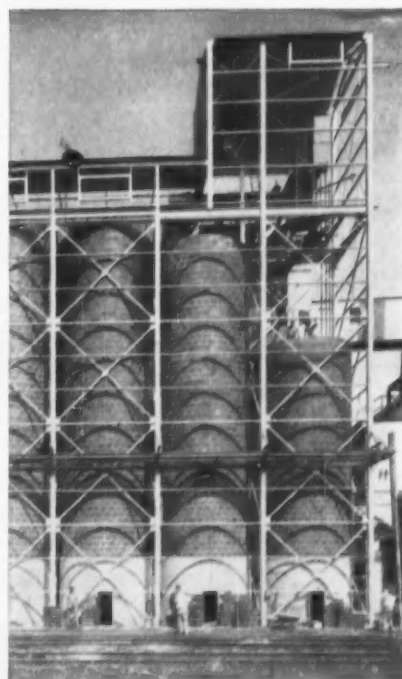


Corrosion-resistant vitrified glazed tile double-wall blocks made in Kalamazoo's own plant. Corrosion-proof mortar joints.

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BULLETIN
1153-B
TODAY



INDUSTRIAL STORAGE BIN DIVISION



Kalamazoo TANK and SILO COMPANY

631 HARRISON STREET... KALAMAZOO, MICHIGAN

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Christensen HYDRAULIC LOADING RAMPS

Feature

**4 WAY MOVEMENT
UP, DOWN, IN & OUT**

TWO MODELS

6' x 6' & 6' x 8'

Up to 20,000 Lb. Capacity

FINGER-TIP CONTROL

WM. CHRISTENSEN Co., Inc.
DEPT. F-53 • YORK, PA.

FORK TRUCK SCALES . . .

(Continued from page 73)

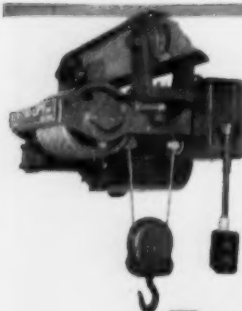
weight of the cabinet, the truck operator can determine immediately whether the cabinet is actually empty as soon as he picks it up. Thus, if the cabinet is not completely empty, it can be returned or otherwise disposed of.

Another function of the warehouse is the maintenance of a small packaging line, where a roller conveyor is set up. There, breakable items like tools, welding equipment, abrasives and safety items are packaged to insure safe delivery to the activity which orders these supplies.

Material which has been removed from storage is temporarily placed on loading docks at one end of the warehouse. It is then loaded onto company truck-trailers which make scheduled stops at the dock. These truck-trailers make regular, timed deliveries throughout the plant during the day, distributing requisitioned supplies to all production departments.

**New
FLOW RACK
goes to any
length to save
you time and
money!**

**find out how
on pages 84 & 85**



**pick up
production
with**

ELECTROLIFT

This is the worm drive hoist that will give your production a big lift. ElectroLift moves materials through your plant with greater speed, safety and efficiency than any crew.

A wide variety of one-man models is available in sizes up to 6 tons. All are designed to operate with low headroom and have optional pushbutton or rope control.

For full details on the features of ElectroLift consult your ElectroLift representative listed in telephone directory or write:

ELECTROLIFT

ElectroLift, Inc.
204 Sargeant Avenue
Clifton, N. J.

2177

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JAKES

**America's Finest
Industrial Trucks and Trailers**

Model TT-10, "SAFE-TOW" conveyor truck for floor type conveyor, also available for overhead type conveyor. Low deck height 7-1/2". 6" rubber wheels, either molded-on type or demountable. Sealed ball bearings and sealed casters. Write for specification sheet.



JAKES FOUNDRY COMPANY

Established 1891

2800 Charlotte Avenue

Nashville 9, Tennessee

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FLOW

CONVEYORIZED STORAGE

(Continued from page 82)

With loading access at only one end, the system provides automatic first-in-first-out service. This was one of the two requirements of a frozen food processor.

The other requirement was the conservation of refrigeration. The firm had been spending as much as \$200 a month for defrosting and cleaning the freezer room—a result of the constant opening and closing of the main door. With a conveyORIZED rack in the freezer, foods enter through a small hatch at one end and are removed through another small hatch at the other. Reduction in the size of openings into the room has eliminated much of the former expense.

The bin-conveyor-rack combination is also used to provide back-up service for ready-to-pack orders, as well as storage for cartons and supplies required in the shipping room.

Photos courtesy Rapids-Standard Co.

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Keep Your Product on the move

with

ASHWORTH

Process Belts

WOVEN WIRE and

FLAT WIRE DESIGNS

Bright or galvanized steel

Corrosion resistant stainless

Chrome nickel alloys for high temperature

Ashworth Metal Belts permit the combination

of product processing and material flow.

ASHWORTH BROS., INC.
METAL PRODUCTS DIV. • WORCESTER, MASS.

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Engineers:

Buffalo • Chattanooga • Chicago • Cleveland • Detroit • Kansas City • Louisville
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F52



for BLOCKS
BRICKS • BAGS
BOXES • BALES
BUNDLES • BEER

Steel for
LOW COST
•
Aluminum
for LIGHT
WEIGHT

New London "BB12" CONVEYOR

12" Rough Top cleated belt elevates material up or down, forward or back; gas or electric power. Standard lengths 10' to 20'; others available.

Also Conveyors for Bulk Materials.

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NEW LONDON ENGINEERING CO.
TEL. 424 • DEPT. F • NEW LONDON, WIS.

Circle No. 157 on Reader Service Card
DECEMBER, 1954



You Have The World's Best Laboratory for Testing Hoists

Specifications are helpful guides in choosing the right hoist for your job. Factory tests give further assurance. But the hoists on your own job hold the key to your wisest final choice. These hoists have been tested in the world's best laboratory for your purposes. They have been operated by your men under your own exacting conditions. Their performance takes the guesswork out of choosing.

That's why Coffing Safety Pull Ratchet-Lever Hoists are standard in so many plants. Their record of durability and safety for more than 25 years under actual job conditions puts them in a class by themselves as the wise choice.

Examine the hoists in your "laboratory." Which is the oldest one in good working condition? When safety is vital, which hoist do your men use? We believe the answer is Coffing — the original ratchet-lever hoist. If you would like more information on the complete line of Coffing Ratchet-Lever hoists, write for catalog FL128P.



Quick-Lift Electric Hoists
Hoist-A-Lifts • Mighty-Midgots
Pullers • Spur-Gear Hoists
Differential Chain Hoists
Lead Binders
I-Beam Trailers

COFFING HOIST COMPANY
Danville, Illinois

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weigh
and
transfer
with only
1 pickup

DILLON
Crane Scales
ARE LOWEST IN COST...

greatest value in scale field today!

Dillon portable crane scales combine weighing and load movement in *one operation*. Cut handling time over 50%. 100% MECHANICAL OPERATION. (No fluids to leak.) GUARANTEED ACCURACY TO WITHIN ONE DIVISION. Large 16" dia. dial, with red indicator, assures easy reading. No-flutter pointer registers instantly. TARE RESET compensates for weight of lifting slings, etc.

Dillon scales are constructed to withstand constant, rugged use. PROTECTED AGAINST ACCIDENTAL OVERLOADING AND SHOCK RECOIL. Unaffected by wide temperature variations. Strong plastic crystal covers the dial. HUSKY SWIVEL HOOK ROTATES 360° ON HEAVY-DUTY BALL BEARING.

Dillon crane scales are compact, economical and dependable. IDEAL FOR FACTORY BAY, YARD OR FIELD. Can't wear out under normal use. Quickly pay for themselves!

W.C. DILLON & Co., Inc.
14620Q Keswick Street
Van Nuys, California
(Suburb of Los Angeles)

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ILLUSTRATED
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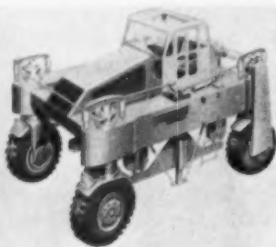
Contains helpful price and weighing information. Gives detailed data on various capacities available.

NEW EQUIPMENT . . .

(Continued from page 42)

Cuts Steel Handling Costs

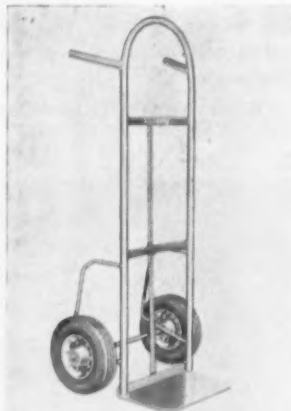
Gerlinger Carrier Company has introduced a 50,000 pound capacity material carrier designed to cut costs and man-hours in handling steel. The unit is available in the swinging shoe model (SC-50) or rigid shoe model (RC-50) in six standard sizes and incorporates many special engineering features for the iron and steel industry.



Write 290 on Reader Service Card for more information

Improved Hand Truck

A vastly improved hand truck has been announced by Nutting Truck and Caster Company. The improvement, embodied in the glides, is said to provide easier, safer and better balanced traversal up and down curbs or stairs. Rather than the intermittent raising and lowering of the load as with conventional glides, the new glides permit a smooth slide in a position approximately parallel to the slope of the curbs or stairs.



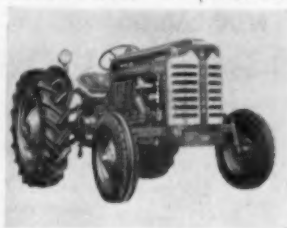
Frame size is 14x47 inches high; open or solid plate noses are available in 5, 7 or 9 inch lengths; and a choice of 6 or 10 inch wheels.

Write 291 on Reader Service Card for more information

"Super" Tractor

A brand-new, all-purpose wheel tractor has been announced by The Oliver Corporation.

Known as the Super 55, it is a four-wheel, adjustable tread type with low profile and short wheel base. A choice of diesel or gasoline engine is available. The hood height is 4½ feet and wheel base is 73 inches. Tractor weight, without attachments, is about 3000 pounds.



Write 292 on Reader Service Card for more information

FLOW

Hydraulic Pallet Truck With Interchangeable Forks

Rack Engineering Company says it is now mass producing its Turnabout hydraulic pallet truck, featuring interchangeable and adjustable forks. The unit has a capacity of 2500 pounds with a four inch standard lift. Interchangeable forks are available in five standard lengths. Adjust-A-Fork feature provides adjustment on truck frame from 25 to 27 inches for easy pallet entry.

Write 293 on Reader Service Card for more information

Four Ton Crane

Coles Cranes, Inc. has added a new model to its line of cranes which is designed to lift four tons at a ten foot radius. It incorporates the gas-electric principle of operation and includes such features as self-resetting limit switches on hoist and boom hoist motion, automatic overload and cut-out and reversible steering. The crane is said to be very compact in size, measuring only seven feet six inches wide x 11 feet six inches long.

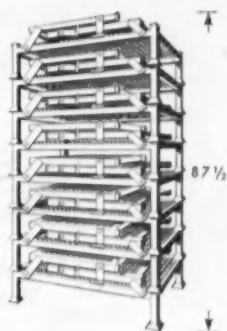
Write 294 on Reader Service Card for more information

Pallet "Automat"

An automatic pallet dispenser and stacker is being marketed by Beacon Machinery, Inc. which is said to reduce pallet maintenance alone by as much as 50 percent. The Automatic Pallet Dispenser and Stacker consists of a raising and lowering mechanism and a magazine to hold a quantity of pallets. The dispenser may be placed at any point where empty pallets are required. It will dispense a single empty pallet either onto a conveyor, or in any other manner convenient to the workman. The pallet



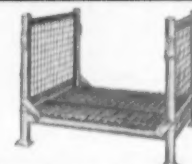
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KNOCKED DOWN



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- Designed to out-last and out-perform ordinary wire containers.

TWO STANDARD SIZES

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Two Ton Capacity • Weight: 200 lbs. Empty
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Skid Platforms • or what have you
RUGGED CONSTRUCTION • PRIME MATERIALS



Model #WB (Wood Bottom)

Stock sizes will accommodate loads up to 200 lbs., possibly greater, depending upon material packed and handling method.

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2000	\$1.96	\$2.14	\$2.28
1000	1.99	2.17	2.31
500	2.02	2.20	2.34
250	2.07	2.25	2.39
100	2.12	2.30	2.44

Model	Size	Length	Width	Depth	Weight
WB-1	I. D.	14 1/4"	11 1/4"	9"	11 1/4 lbs.
WB-2	I. D.	18"	11 1/4"	9"	13 lbs.
WB-3	I. D.	20"	11 1/4"	9"	14 lbs.

SPECIAL APPLICATION

MB—(Metal Bottom) PERFORATED



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SECURELY...
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Write today for quotations on special sizes... Facilities available for special markings in various colors and numbers for identification purposes. Please submit detailed specifications.

stacker is placed at a pallet unloading point. As a pallet is emptied, it is placed on a short conveyor piece and rolls into the stacker where it is automatically raised into the magazine.

Write 295 on Reader Service Card for more information

Supermarket Hand Truck

An all-steel "Featherlite" hand truck has been added to the line of equipment manufactured by The Howe Scale Co., Inc. Especially designed for use in supermarkets, the new truck features a folding rack on the top, which is for holding cartons at a convenient working shelf level while opening and price-stamping goods. Wheels are mounted inside the truck frame and the nose plate is of solid heavy gauge steel. It is said to be light and easy to handle.



Write 296 on Reader Service Card for more information

Easy Maintenance

The Model 19-6 Lift-A-Loft is designed for fast, efficient handling of overhead maintenance jobs up to 25 feet high, according to the manufacturer Mitchell Maintenance Co., Inc. Only one man is needed to operate the unit, the rising up and out to the objective in less than 30 seconds. Use of the truck is said to have resulted in substantial labor savings.

Write 297 on Reader Service Card for more information

Improved Shelf Truck

Increased structural strength with a low weight factor has been achieved according to the William Bal Corporation in its improved shelf truck for factory production or stock handling. The basic design, incorporating hard vulcanized fibre, now has reversed-channel steel body bands in lieu of hardwood bands used previously. The greater rigidity obtained is said to eliminate body "sway".



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CESCO

CONTAINER CO.

General Offices: 475 Fifth Ave., New York 17, N. Y.

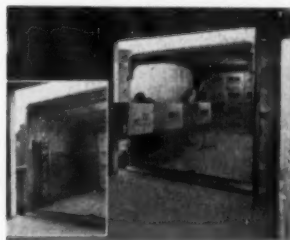
Factory: NORTHAMPTON, MASS.

Circle No. 48 on Reader Service Card for more information
[48

FLOW

Speeds Loading

A portable, telescoping wheel conveyor that opens to any length between 4'4" and 10'2", with no drop in conveyor level, has been developed by



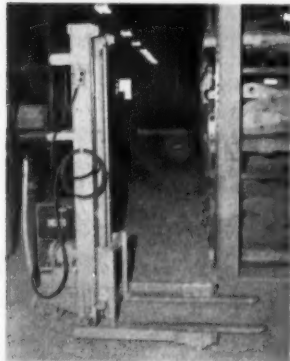
Associated Metal Fabricators, Division of Jersey Sheet Metal Products, Inc. Known as the Model 75 Tel-O-Veyor, it can be used in multiple units or attached on existing conveyor line. It is

used within plants to increase the efficiency of product flow, particularly to simplify aisle cross-overs and to speed loading and unloading operations. It is 12 inches wide and weighs approximately 70 pounds.

Write 299 on Reader Service Card for more information

Battery Powered Pallet Stacker

The pallet stacker originally designed by The Raymond Corporation to plug into an electrical outlet is now offered with a 12 volt battery operated lifting motor and automatic built-in charger. Two six volt, 125 ampere hour batteries are wired in series to provide the 12 volt current. Batteries can be charged during off duty use to keep the unit ready for a full 8 hour shift operation. Designed



to lift and stack 2000-pound pallet loads, the unit has adjustable straddle type base forks and lifting forks.

Write 300 on Reader Service Card for more information

No-Friction Hook Scale

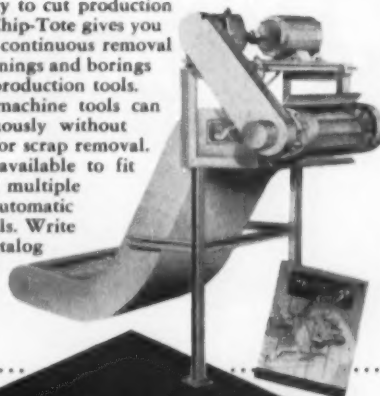
The Martin-Decker SU-20 Sensater is a hydraulically operated hook scale that is said to have a guaranteed accuracy of $\frac{1}{4}$ of 1 percent at any point on the dial. This accuracy was made possible through the discovery and development of a new kind of mobile diaphragm that develops a piston-like stroke, but without a friction-causing piston rod or packing. The diaphragm



does not deflect, but moves with its backing

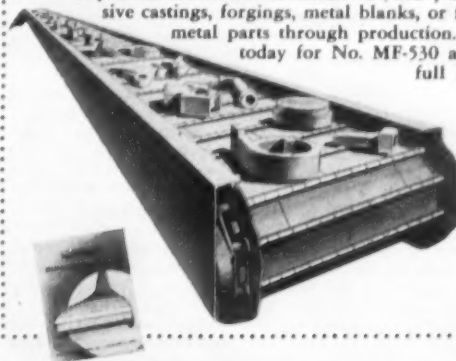
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Here's a way to cut production costs! The Chip-Tote gives you "hands-off" continuous removal of chips, turnings and borings from high production tools. Automatic machine tools can run continuously without shut-down for scrap removal. Chip-Totes available to fit all standard multiple spindle or automatic machine tools. Write today for catalog No. MF-640 and see the advantages available.



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contain V-Belting, Fasteners and Tools—everything you need in one compact package to make up V-Belts quickly. Available in sizes A, B, C & D.

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150

plate, transmitting a constantly accurate signal to the gauge. The Sensater is available in four capacities from 2500 to 20,000 pounds.

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Conveyorized Storage

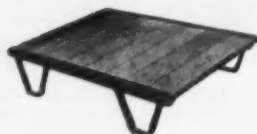
Low cost "conveyorized storage" in a practical, new application called Rapistan Flow-Rack has been announced by The Rapids-Standard Company, Inc. Combining gravity wheel track with Rapistan rack components, the new unit is said to cut inventory and stock handling steps to a minimum. Through use of gravity force the rack moves goods to its front, where efficient selection can be made with no long aisle walking or hunting.



Flow-Rack is made of rolled steel and produced in six foot rack height for normal reach. It may be ordered in any width or length over-all, and is adaptable to the size, weight and nature of the product.

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In production or in storage IRONBOUND EQUIPMENT HANDLES SMALL PARTS MORE EFFICIENTLY



Standard 2-way entry bolted type skid built to handle loads up to 5 tons.



Standard box top welded to standard skid. Available too, with removable boxes. Handles many items in production and storage.



Flexible arrangement of boxes and skids permits tiering and stacking to meet your individual requirements. Provides quick availability, easy handling, or storage for complete units or parts.

Each of the units illustrated has an important use in modern industry. Ironbound skid platforms and box tops are prime sources of increased plant capacity so vitally needed today. Our representative can help you to increase your output and plant space. Catalog GP-7 may help you, too!



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FLOW

Motorized, Rotating Crane Hooks

Development of a line of motorized, rotating crane hooks has been announced by Heppenstall Company. All operations of the hook are controlled by a crane man from his cab, with no need for a ground crew to turn the load. The hook can be rotated through a full 360 degrees, in either direction. Used with a "C" hook, as shown in the picture, it permits a coil of steel to be turned horizontally as it is lifted. It can also be used by the crane man with automatic tongs, magnets, or sheet lifters to turn loads to the exact position required.

Write 303 on Reader Service Card for more information

Side-Loading Fork Truck

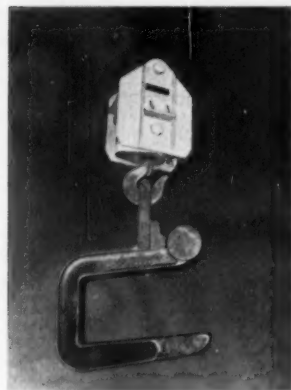
A completely redesigned model of the Traveler, a side-loading fork truck, has been announced by the Baker-Raulang Company. Originally designed to handle long loads like a straddle truck, stack like a fork truck and deliver like a highway truck, the new unit has improved load distribution, better stability and higher tractive effort, according to the manufacturer. Two main features include a torque converter drive and springing of all four wheels.

Write 304 on Reader Service Card for more information

Temporary or Permanent Hoist

A platform hoist that requires no ground excavation or special foundation, and which may be placed on upper floors, temporary locations, driveways, or almost any location, is being manufactured by Globe Hoist Company. Called the Electro-Loader, the unit's lifting power is supplied by an electric motor operating a simple cable mechanism which raises the checkered steel plate platform to an above-floor height of 5'10 $\frac{1}{4}$ ", or levels accurately at any intermediate point. It is equipped with adjustable automatic top and bottom limit stops, centrifugal governor and safety brake, plus a slack cable shut-off.

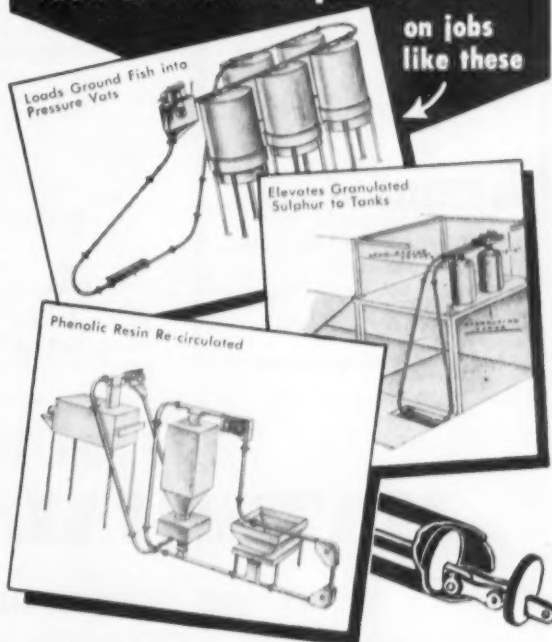
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HERE'S HELP!

let *Hapman* tubular conveyors pay for themselves in your food or chemical plant!

on jobs like these



CAN YOU CUT COSTS—for a better competitive position and longer profits? Yes—through automatic bulk materials handling with Hapman Tubular Flight Conveyors! Food and chemical processors often find labor savings alone pay for this equipment in one to three years!

ADDITIONAL BENEFITS resulting from Hapman's unique patented design features can be equally valuable. Hapman Tubular Conveyors are dust-tight, odor-tight, liquid-tight — safely confining wet or dry, corrosive or non-corrosive, toxic, hygroscopic or other materials. With one drive, circuits operate in any plane or angle, dodge obstacles, pass through walls or narrow spaces.

AS THE FIRST STEP toward safer, lower-cost handling, write us, describing your application and requirements. We'll help compute potential savings.

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DIVISION HAPMAN-DUTTON COMPANY

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Let us help you find
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A preliminary survey—
without charge will deter-
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and the cost.

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Handling Bulk? Here's a Unique System



A revolutionary idea for bulk handling of flowable solids is U. S. Rubber Company's Sealed-Bin container. The unit is built with four plies of high strength cord fabric and synthetic rubber molded into one piece, and six-ply construction is used at points of higher stress. The container is internally reinforced by six strong, flexible lifting cables attached to one common point at the top, for ease in lifting and handling. It is tough, non-corrosive, verminproof, collapsible, relatively lightweight, and convenient for movement by crane, hoist or fork truck. It is leakproof and can be pressurized with inert gases to protect air sensitive ladings. Space savings of approximately 85 percent in the storage and shipment of empties is claimed. The units may be bought or leased, and are being marketed by O-T-D Container Corporation.

Write 306 on Reader Service Card



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SMALL METAL PARTS
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ROLLAWAY SEMI-LIVE SKIDS AND JACKS

FEATURING THE **RE-NU TOP**

Steelbound Rollaway Skids combine the best features of bolted and welded designs. The frame supporting members are arc-welded, and the renewable hardwood deck is tightly clamped with steel bolts of extra tensile strength. Welded-in, heat-treated, steel connecting pin. Semi-steel rubber-tired or Flor-Savr wheels with Hyatt roller-bearings, heat-treated steel axles.



CAPACITIES:

1500, 2500, and 5000 POUNDS
YALE AND TOWNE ROLLAWAY JACKS
are stocked at the Lanham Company's plant
and are sold and shipped directly from
Keokuk for use with ROLLAWAY SKIDS.



**LANHAM
VSKID CO. V**

DIVISION OF THOMAS TRUCK & CASTER CO.
584 On the Mississippi River, Keokuk, Iowa

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154

Circle No. 196 on Reader Service Card for more information
FLOW



"We Saved SIX MAN HOURS on the FIRST THREE TRUCKS we loaded!"

"I feel our Magliner Dock Board fully paid for itself in 60 days or less!" says C. J. Monroe of Rycenga Manufacturing Company, Detroit, Michigan.

"We equipped our loading dock with a Magliner magnesium dock board after a thorough investigation of other products available, and only after considerable deliberation.

"We considered the possibility of a hydraulic leveling ramp at a cost of about \$3,000.00, but found that in addition to the relatively heavy initial investment required, this type of equipment also involved an element of maintenance.

"Just as important to us, however, as the substantial difference in initial expenditure, we felt that Magliner Dock Boards, at less than 1/4 the cost, would do a better job for us from an operational viewpoint alone.

"Our plant was recently built and occupies about 60,000 sq. ft. of floor space. It contains



Magnesium Light! Magnesium Strong!
Easy one-man handling!

a single station well, which is located inside the building. All our shipping and receiving is done at this point, so our Magliner dock board and ramp sees a lot of service.

"We saved 6 man hours on the first 3 trucks we loaded! I feel our Magliner fully paid for itself in 60 days or less!"

"The old steel plate we used before was a definite safety hazard. Our company regards our Magliner as an exceptional investment just from the safety angle alone. When you consider in addition, the time and money we are saving, plus the increased shipping and receiving capacity we get through the use of our Magliner dock board and ramp—I don't know of a better way to promote efficiency, safety, and economy on the loading dock."



Today's highway trailers vary greatly in floor height. To adequately service high-floor trailers, a ramp used in combination with the dock board is the most economical and practical solution. The ramp is used only when necessary to gain that additional height without exceeding permissible slope. The ramp is securely locked in position with Magliner's exclusive patented drop lock.

The experience of Rycenga Manufacturing Company is typical of many companies across the nation who have standardized on Magliner Dock Boards. Without exception these companies have found that Magliners speed loading traffic efficiently and safely, and cut loading costs. They too have found that Magline offers all the important dock board advantages.

Here are some of the many features which are available only with Magliner Dock Boards: Tire-Saver Safety Curbs—prevent power truck tire damage. Triple Strength Curb Ends—don't break loose, even under continuous daily abuse. Fully Adjustable Drop Lock—quickly adjusts to any height or span—automatically locks truck dock boards in position.

You too can save valuable man hours and cut loading costs with Magliner Dock Boards. Get the facts! Write today for your copy of DB-204.

FOR RAIL OR TRUCK



DOCK BOARDS

Write Today for Bulletin DB-204.

MAGLINE INC., P.O. Box 346, Pinconning, Michigan—Canadian Factory: Magline of Canada Limited, Renfrew, Ontario.

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As You Finalize Your Advertising Program for 1955.....



FLOW has some helpful Tools for You

As you finalize your advertising program for 1955, you are intensely conscious of the responsibility for spending a lot of dollars to make a success of your sales programming. We've produced material which demonstrates conclusively that FLOW reaches the Material Handling and Protective Packaging markets more effectively and more economically than any other medium. We invite you to inspect and to use the tools we've fashioned to help you reach your sales goals.

NEW!

The second ACTION AUDIT, our continuing study of WHO reads business paper advertising, WHAT they read, HOW they read it . . . and WHAT they do about it, is just completed for all of our magazines. There's a wealth of useful data in a form that can be applied directly to your product, your market, your sales problem. We would be happy to go over it with you, for any of the fields we cover.

NEW!

New NIAA reports for each of our publications are fresh from the press. Without sales promotion material of any kind, factual complete reference data is available for your quick information, exactly as asked for by the National Industrial Advertisers Association. Ask us for any or all of them.

NEW!

What is Franchise Circulation?

Franchise Circulation is the method devised by Industrial Publishing more than twenty years ago, to reach those individuals, regardless of title, who control specification or purchase in the markets served by its magazines.

How is Franchise Circulation Secured?

Wholesale distributors in the field served by the magazine, subscribe to the magazine for the men their salesmen designate as the active sales decision-makers. They are the men *your* salesmen have to convince to make a sale.

How is Franchise Circulation Kept Current?

The distributor pays twelve cents a month for each copy we mail for him, and changes in his list are made monthly. The changes are made by his own sales staff, who are alert to see that the magazine continues to reach those people who can buy from them.

How does Franchise Circulation Help Your Sales?

The distributor salesman who named the man who gets the magazine did so because he has to sell him. So do you and your competitor. When he picks up the magazine of his industry, to read about its products and its processes, he has the leisure and the interest to be paying attention to the very problem that you can help him solve. That's the showcase for your advertising story . . . before The Right Man, in the Right Place, at The Right Time.

How Does Franchise Circulation Help Your Salesman?

When your advertisement has reached The Right Man,

- (a) It can inspire an inquiry, which will give your salesman an active lead, since it came from the man with the power to buy.
- (b) It can develop an interest in The Right Mind, making later entree for your salesman easier.
- (c) It can repeat your salesman's story many times after his call, keeping alive the investment he has made in calling.



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